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Protecting Water, Forests and Wildlife

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March 5, 2021

Comment on THP 2-20-00159 SHA "Powerhouse"

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I. Introduction

This comment is submitted to the Cal Fire Timber Harvest Review Team regarding plan number 2-20-00159 SHA named Powerhouse. This plan was previously submitted in 2017 as the Artemis plan, 2-17-070 SHA, which was withdrawn in 2018. All of the problems that we wrote of regarding the Artemis plan are still present or exacerbated. This resubmitted plan continues the ongoing practice of providing no factual, valid cumulative impacts analysis and continues to ignore the downstream cumulative effects which have been documented by many sources.

An approval of this plan by Cal Fire will fail to uphold the environmental protection requirements of the California Environmental Quality Act (CEQA) and will trigger a legal challenge.

The following comments are submitted on behalf of Battle Creek Alliance (BCA), California Chaparral Institute, Center for Biological Diversity (CBD), Environmental Protection Center (EPIC), John Muir Project, Shasta Environmental Alliance (SEA), and Wild Nature Institute regarding this plan submitted by Sierra Pacific Industries (SPI). Please consider these comments as significant environmental concerns raised during the review team process.

Our comments and substantive evidence show that the material submitted by SPI:

1. is largely not relevant to the logging plan, the watershed area affected by the plan, or plan-related adverse cumulative watershed effects;

2. contains confusing, false, contradictory, insufficient, and purposely misleading information;

3. fails entirely to address the significant environmental concerns raised here;

4. is based on subjective, unsupported conclusions and speculation;

5. does not provide a substantial, factual, evidentiary basis for Cal Fire to determine that the Powerhouse logging plan is in conformance with the Forest Practice Act and Rules and will not add to significant cumulative impacts which already exist. In light of the full record, approval of this plan would be an abuse of discretion.

A full list of additional information and materials being submitted as part of these comments is at the end of this document. These materials were provided to Cal Fire Nov. 12th, 2020 on a flash drive delivered to their office on Airport Road, in Redding, CA; more have been sent by email subsequently. Cal Fire agreed to add the past logging plans and their Official Responses to the record for this plan. (Logging plans and Cal Fire's Official Responses to plans 2-03-158 Digger, 2-04-166 Hazen, 2-04-181 Willow Spring, 2-06-173 Lookout, 2-08-052 Bailey's, 2-08-097 Long Ridge, 2-09-027 Plateau Flat, 2-10-003 Dry Gulch, 2-10-034 Grace, 2-10-067 Blue Ridge, 2-12-026 Reynolds Flat, 2-12-031 Hendrickson-Defiance, 2-17-070 Artemis, 2-18-055 Graceland, 2-19-00180 Rio Gatito.)

II. BCA Background

BCA was formed in 2007 by local residents due to the ongoing logging, primarily by clearcutting, of the industrial timberland in the mid-zone of the Battle Creek watershed. Since that time we have read dozens of logging plans submitted for this, and other, California watersheds. We have submitted comments on over a dozen THPs, and spent thousands of hours on research regarding the natural resources of this, and other, areas. All of our comments have raised concerns about the declining health of the biological resources in this watershed which support and enhance the common good of the inhabitants of California. (Eg. SPI logging plans, BCA comments, and Cal Fire's Official Responses to plans: 2-06-173 Lookout, 2-08-052 Bailey's, 2-08-097 Long Ridge, 2-09-027 Plateau Flat, 2-10-003 Dry Gulch, 2-10-034 Grace, 2-10-067 Blue Ridge, 2-12-026 Reynolds Flat, 2-12-031 Hendrickson-Defiance, 2-18-055 Graceland, 2-19-00180 Rio Gatito.) Table 1 and Figure 1 illustrate the industrial timberland area and acreages that the logging plans mentioned above are part of.

In 2009, BCA began collecting water quality data, and has collected nearly 14,000 (as of Dec. 2020) samples since then. The record of these samples is in the California State Water Resources Control Board's CEDEN site (California Environmental Data Exchange Network online). A research paper by two hydrologists and a GIS specialist/senior scientist regarding this data was published in the scientific journal, *Environmental Management*, in 2019 (Lewis et al.) Previous technical reports regarding our data include Myers 2012, Lewis 2014, and Lewis 2016. BCA felt compelled to collect data due to the fact that the regulatory

agencies were collecting little to no data to base their decisions on. As far as we know, we collect the only long-term, year round water data in the Sierra/Cascade region to track upland disturbance's impacts. Cal Fire acts as the lead agency in the logging plan review process and has consistently approved plans as having "no significant impacts" while using no factual, quantitative data. The Review Team spends little time in the field; this writer has spent over 30 years and many thousands of hours in the field.

Delineation	Acres	% of Watershed
Battle Creek HSA	222,367	100%
Timber Production Zone (2014)	84,443	40%
Federal lands	66,687	30%
State lands	1205	<1%
Industrial timberlands	75,874	34%
Non Industrial timberlands	6940	3%

Table 1. Cal Fire FPGIS table of timberland in Battle Creek watershed. Industrial timberlands represent the majority of the acreage and are the predominant land use in the mid-elevation range of the watershed.

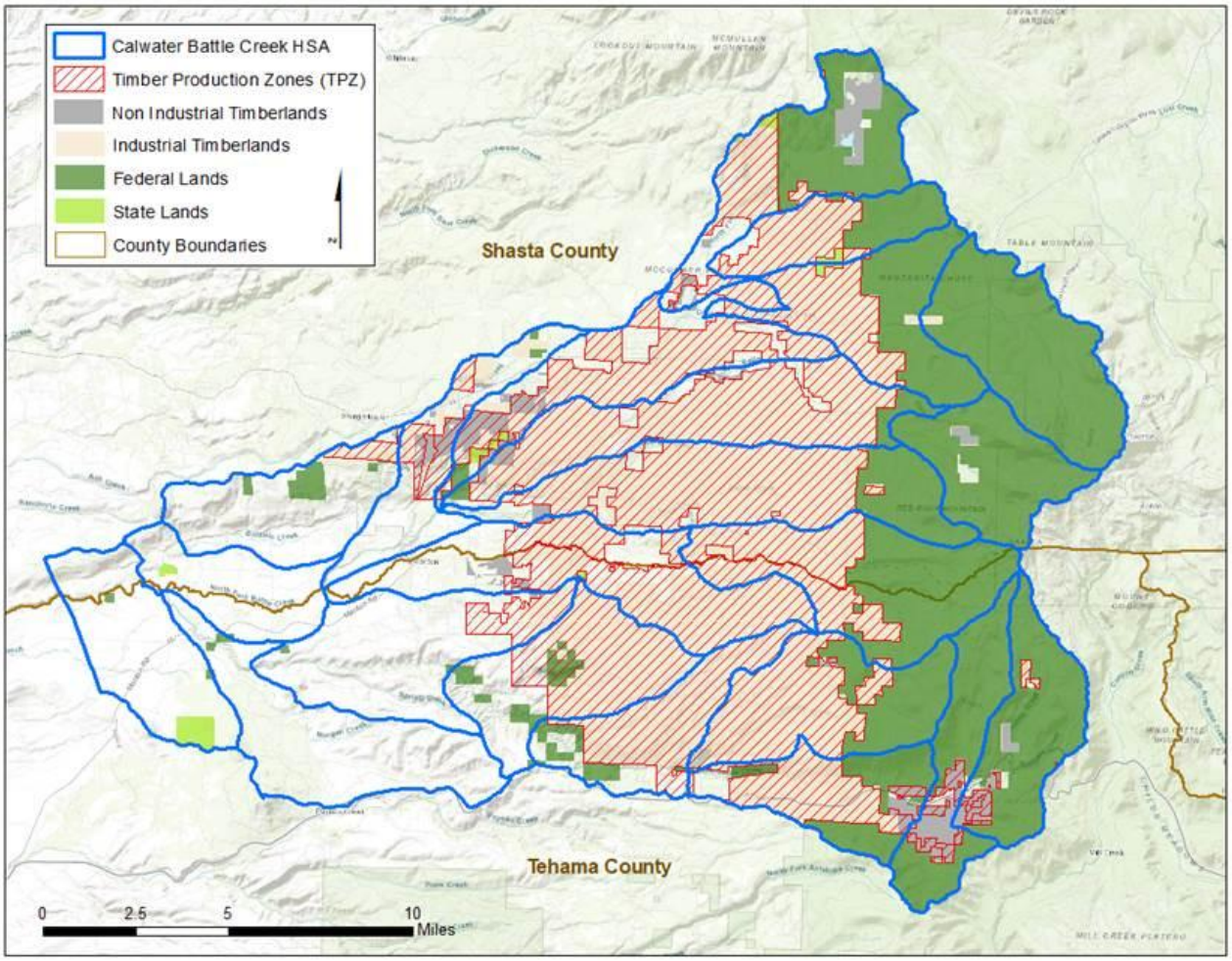

Figure 1. Cal Fire FPGIS map of timberland in Battle Creek watershed. Industrial timberland accounts for 34% of the watershed's land area, as detailed in Table 1.

III. Cal Fire's Ongoing Practices Demonstrate a Prejudicial Abuse of Discretion

A. Cal Fire practices do not require, gather or disperse information needed by their agency and the public to make informed decisions.

The Rio Gatito logging plan, 2-19-00180, which is slightly south of this plan, was approved in April 2020. During the comment period for that plan we requested that Cal Fire provide us with documentation (map, written description) of where their Review Team went during the pre-harvest inspection, how many acres were reviewed, and how they looked for cumulative impacts, as required by law. They refused to give us the information stating that "Routes taken, or acreages actually reviewed, are not required to be reported, and would be difficult to actually determine. " (Cal Fire Ramaley, 2019.) Once again, on Oct. 14th, 2020, with this plan we requested documentation of the pre-harvest inspection with a record of GPS locations kept and given to us. Once again, Cal Fire refused. "There are no requirements for this to be completed. I am cc'ing my supervisor Dennis Hall and he can provide any additional information if he wants to." (Ramaley 2020.) Apparently Dennis Hall "didn't want to" since we received no information or contact. On Oct. 28th we found that the pre-harvest inspection had occurred on Oct. 26th, not because it was updated on the Cal Fire CalTrees site, but because we sent an email to John Ramaley since there were different dates listed on the CalTrees site, neither accurate. The public may only be allowed 30 days to comment after the inspection; it is crucial to have accurate information, but the Cal Fire system is often behind, adding an additional burden on public commenters. This is part of the ongoing obstruction that Cal Fire has practiced for many years which blocks public knowledge regarding logging plans and comments as much as possible. The continuation of that practice with this plan does not uphold the law.

The California Code of Regulations addresses logging plans (THPs):

14 CCR 897 The information in [THPs] shall also be sufficiently clear and detailed to permit adequate and effective review by responsible agencies and input by the public. . .

14 CCR 898.2 The Director shall disapprove a plan as not conforming to the rules of the Board if . . .there is evidence that the information contained in the plan is incorrect, incomplete or misleading in a material way, or is insufficient to evaluate significant environmental effects.

Cal Fire is violating both of these regulations by not collecting or providing sufficient information needed by the public to effectively review the plan or Cal Fire's process. Withholding this information also does not provide the public with sufficient information to ascertain whether Cal Fire has adequately evaluated significant environmental effects. This practice is part of Cal Fire's ongoing pattern of dismissing the public and refusing to answer questions the public asks. (See BCA comments and Cal Fire Official Responses regarding logging plans 2-06-173 Lookout, 2-08-052 Bailey's, 2-08-097 Long Ridge, 2-09-027 Plateau Flat, 2-10-003 Dry Gulch, 2-10-034 Grace, 2-10-067 Blue Ridge, 2-12-026 Reynolds Flat, 2-12-031 Hendrickson-Defiance, 2-18-055 Graceland, 2-19-00180 Rio Gatito.)

An important part of any cumulative impacts analysis is comparing current conditions with past conditions to track what changes are occurring. The Powerhouse logging plan continues on the path of significant adverse effects being amplified because no baselines or thresholds are ever set or used. 14 CCR 15064.7 states: "(a) [e]ach public agency is encouraged to develop and publish thresholds of significance that the agency uses in the determination of the significance of environmental effects. A threshold of significance is an identifiable quantitative, qualitative or performance level of a particular environmental effect, non-compliance with which means the effect will normally be determined to be significant by the agency and compliance with which means the effect normally will be determined to be less than significant."

The Board of Forestry is responsible for enacting rules to uphold the legislative intent of the CCRs, but has never created any rules to set "thresholds of significance". Therefore, there are not any "identifiable quantitative, qualitative or performance levels" to adequately determine what significant cumulative environmental impacts are occurring in the physical reality of California's forests and watersheds. Nonetheless, the legislative intent is clear, and this plan offers only SPI-produced concealments which do not adhere to the intent of California's lawmakers.

This logging plan is more fiction on paper to disguise the facts which are occurring on the ground.

B. Cal Fire practices demonstrate bias against environmentalists.

During the comment period for the former iteration of this plan (Artemis) we submitted a Public Records Act Request and received emails between the Cal Fire Review Team. The following emails exhibit a pre-determined approval on the Review Team's part, and an intent to use their Official Responses from a decade ago for a copy and paste response to our comments. These practices do not uphold the guiding principle for the review of projects under CEQA, including the review of logging plans. That principle is that CEQA must be interpreted so as to afford the fullest possible protection to the environment. There is nothing in the rules or law that upholds the regulatory agency acting in the manner demonstrated in the following emails. Our experience is that these cursory practices will be repeated with this plan.

The first email image is a Cal Fire Review Team email from Adam Deem on Feb. 2, 2018, before the close of the Public Comment deadline for the Artemis plan. This email exhibits a planned decision made on how to reject our comments before weighing the evidence we presented, by using their Official Responses to our comments from plans in 2010 and 2012:

Past ORs for the Battle Creek Alliance

Deem, Adam@CALFIRE (Adam.Deem@fire.ca.gov) Add contact

To: Meese, Dale@CALFIRE;

Cc: Woessner, Jonathan@CALFIRE; Ramaley, John@CALFIRE;

10-003-TEH_OR_final_3.21.11.... 10-067-TEH OR_Final_ 11.16.11.d... 12-026 _SHA_OR_Final_12.6.1...

These are the three most recent plans in the area with concern letters from BCA
2-10-003-TEH
2-10-067-TEH
2-12-026-SHA

These two older plans have an index that was developed for the Administrative Record. If there is an issue that was not answered above you may want to look at these for an idea of where to start.
\\FPNORTHOPS01\Root\data\Resource Management\Old Legal Cases\Oliviera V CAL FIRE\Plateau Flat\Plateau Flat OR Index
\\FPNORTHOPS01\Root\data\Resource Management\Old Legal Cases\Oliviera V CAL FIRE\Long Ridge\Long_Ridge_OR_Index

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The following are Cal Fire Review Team emails during the Artemis plan, Jan. 26th to 29th, 2018. These emails show the behind-the-scenes actions to undermine public comments, including contacting an employee (Ed Murphy) of the company (SPI) Cal Fire is supposed to be regulating, to obtain information to use against our comments:

RE: Comment on THP 2-17-070 SHA

Cafferata, Pete@CALFIRE (Pete.Cafferata@fire.ca.gov) Add contact 1/29/201

To: Ramaley, John@CALFIRE;

Cc: Coe, Drew@CALFIRE; Huff, Eric@CALFIRE;

John: I will read over Marily's letter as well.
Pete

From: Ramaley, John@CALFIRE
Sent: Monday, January 29, 2018 7:39 AM
To: Cafferata, Pete@CALFIRE <Pete.Cafferata@fire.ca.gov>
Cc: Coe, Drew@CALFIRE <Drew.Coe@fire.ca.gov>
Subject: RE: Comment on THP 2-17-070 SHA

I called Ed Murphy to see if they have data for Upper Digger Creek, but he didn't think so. He is going to check. The plan is located above the Ponderosa Fire, and half the watershed is federal. It's been over 10 years since SPI was in the watershed. Drew said he would read the letter.

Public comment is still open so I want to wait until it closes before starting the response. I believe Marily was going to send supporting documents but we have not received them yet.

From: Cafferata, Pete@CALFIRE
Sent: Friday, January 26, 2018 4:46 PM
To: Ramaley, John@CALFIRE <John.Ramaley@fire.ca.gov>
Cc: Coe, Drew@CALFIRE <Drew.Coe@fire.ca.gov>
Subject: RE: Comment on THP 2-17-070 SHA

Hi John. What do you want from Drew and me on this comment letter?
Pete

These emails do not reflect regulatory staff having an attitude or practice of striving to do a thorough and honest evaluation of cumulative impacts. The emails show a biased and discriminatory practice in their treatment of our comments. Further evidence of these practices and treatment are included in our references (Battle Creek Alliance 2010, 2011, 2012, 2013, 2017, 2018, 2019, 2020, Cal Fire whistleblower emails 2015, Cal Fire Official Responses to our past comments) and summarized in Battle Creek Alliance (2020) "Intimidation and Suppression Timeline".

This writer has been reading logging plans for the Battle Creek watershed since 2007 along with Cal Fire's Official Responses to public comments. I have found that the majority of the plans are copied and pasted repetitions of the same information, with no site-specific verifiable or factual evidence provided. Cal Fire's Official Responses utilize the same repetitive copy and paste dismissal of anything that disagrees with the timber industry, while offering no factual evidence to support their approvals. No ongoing factual data is collected or presented to detect trends and changes over the two decades that the majority of the forest cover in the industrial timberland has been logged. Credible science collects evidence over time to compare the changes which have occurred in order to determine what impacts there are. None of that has happened over the course of the 2 decades Cal Fire has blindly approved logging plans as having "no significant effects".

State agencies, including Cal Fire, are bound by ethics laws. One of the key concepts of those laws is that a public agency's decisions should be based solely on what best serves the public's interest.

Cal Fire's behind-the-scenes biased review practice does not uphold the intent of the State's laws and rules, nor does it uphold the part of Cal Fire's stated mission to protect California's natural resources.

The Powerhouse plan at issue here suffers from the same ongoing deficiencies that the past plans have by not providing a robust and defensible cumulative impacts analysis.

IV. Information in the Logging Plan is Incorrect, Incomplete, and Misleading, and Therefore Insufficient to Evaluate Cumulative Impacts

A. Contrary to law, Cal Fire has a pattern and practice of accepting and approving logging plans that lack factual, quantitative data or valid Cumulative Impacts analyses

The following map (Figure 2) shows the withdrawn 2017 Artemis plan (the previous iteration of the current plan) in red with the white borders around the red representing the current Powerhouse plan. The purple borders are the Rio Gatito plan that was approved in April 2020. This plan abuts the 2012 Ponderosa Fire area which was heavily logged post-fire under Emergency exemptions, as well as being situated upstream of tens of thousands of acres cut in the past ~20 years. Contrary to law, no analysis has ever been performed to ascertain the cumulative impacts or the cumulative watershed effects (CWE) downstream of all the plans together. This plan continues that practice.

According to Cal Fire's records (CA Dept. of Forestry and Fire Protection FPGIS 2018), 67 logging plans covering over 61,000 acres have been filed primarily in the industrial timberland block of the Battle Creek watershed between 1997 and 2016. (Figure 2.) The 61,000 acres of plans do not include additional acres logged under emergency and other types of exemptions, such as the post-fire salvage logging of the 2012 Ponderosa Fire which

covered over 27,000 acres. 61,000 acres is over 80% of the 75,874 acres of industrial timberland. The Rio Gatito plan added 822 acres; this plan adds another 1,102 acres.

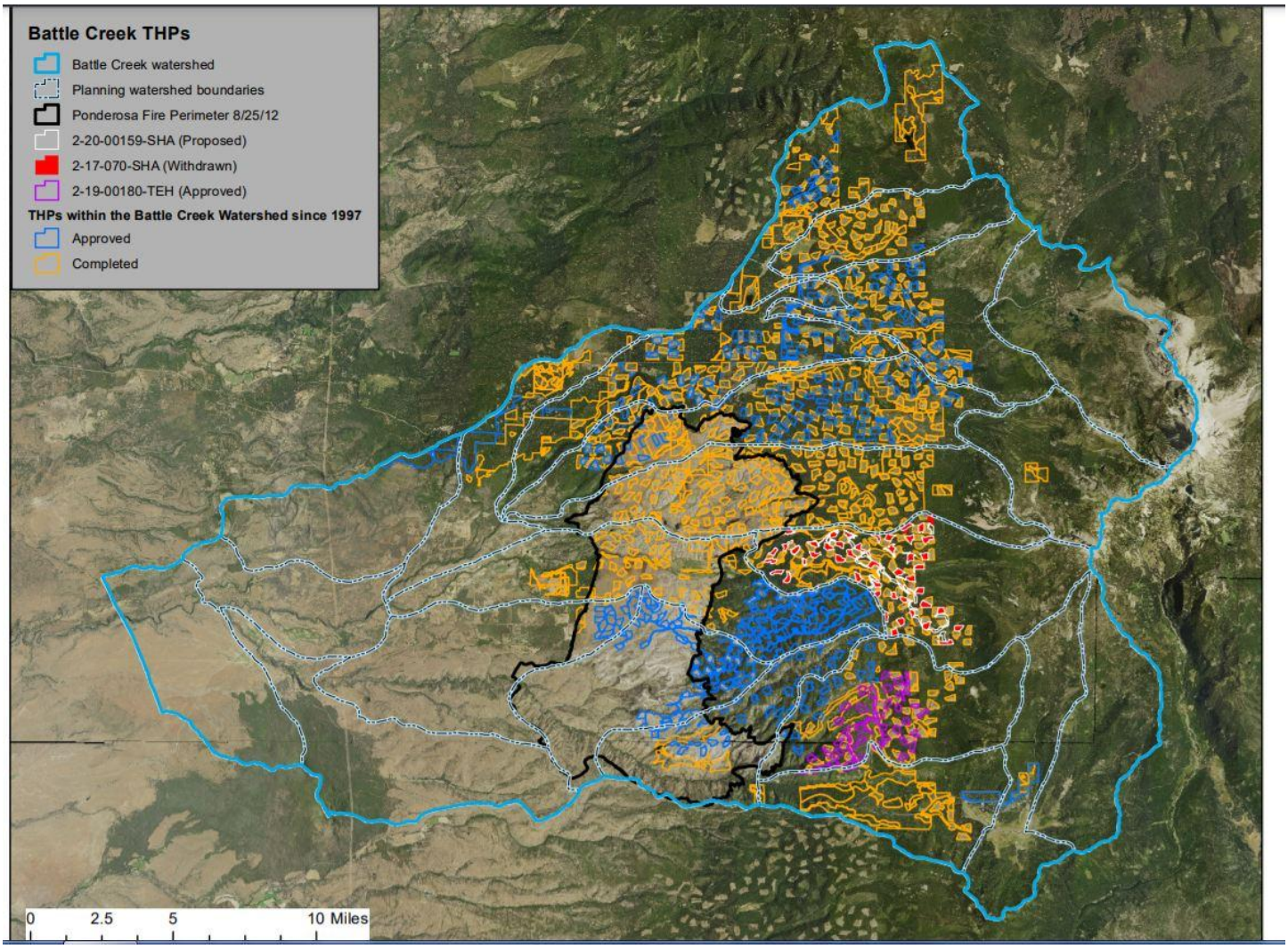


Figure 2. GIS map of the current Powerhouse plan units laid over the 2017 Artemis plan units that was withdrawn, shown in red and white markings. The purple markings are of the 2019 Rio Gatito plan, approved in April 2020.

According to Cal Fire Forest Practice GIS data (FPGIS), over 75,000 acres of industrial timberland exists in a large, contiguous block in the Battle Creek watershed. (Figure1, Table 1.) The cumulative impacts to this large block of land have never been analyzed in SPI's logging plans under the practices Cal Fire has followed for decades. The effects on downstream waterways have not been monitored or accounted for or protected from significant effects, by these ongoing practices. The biota population was not assessed prior to the major landscape changes, and no ongoing study has been undertaken to assess what changes have occurred. For decades, professional hydrologists have made observations such as: "**Examination of recently approved THPs and SYPs indicates that plans are being approved that do not contain technically valid cumulative impact assessments.**"(Reid 1999, see also Dunne et al. 2001.)

Cal Fire has a historical pattern and practice of accepting the same type of factually-void logging plans throughout the Battle Creek watershed, never providing the public or other decision makers with the information necessary to knowledgably assess the cumulative environmental impacts of each logging plan. While decisions concerning whether or not to ultimately approve a plan are matters left to the judgment of Cal Fire, Cal Fire does not have discretion to take short cuts through the environmental review process, compromise its core obligations under CEQA, and approve a plan with significant impacts that have not been fully analyzed.

Although the Forest Practice Rules contain a number of generic best management practices ("BMPs") or mitigation measures to reduce the environmental impacts of logging, experts have understood for decades now that the measures are not sufficient to prevent cumulative watershed effects ("CWEs") from occurring. CEQA does not permit mitigation measures to be used to avoid assessing whether a project's cumulative impacts will be significant (San Joaquin Raptor Rescue Center v. County of Merced (2007) 149 Cal.App.4th 645, 663). Merely the inclusion of mitigation measures in the plan description does not make any potential impacts automatically less than significant (Lotus v. Dept. of Transp. (2014) 223 Cal.App.4th 645, 656).

In a report titled, "A Scientific Basis for the Prediction of Cumulative Watershed Effects" (Dunne et al. 2001, "CWE Report") a "blue ribbon panel of experts" on the University of California Committee on Cumulative Watershed Effects comprehensively reviewed the Forest Practice Rules, dozens of logging plans, and ongoing water quality impacts. The CWE Report explains the inadequacy of Cal Fire's application of the Rules to avoid cumulative watershed effects. The CWE Report pointed to three reasons why CWEs are occurring, despite Cal Fire's application of the Forest Practice Rules. The first problem is that Cal Fire does not require that plans contain sufficient data to allow the agency and the public to assess existing and expected impacts. ("Information provided in individual THPs that we examined was often incomplete or too subjective to assess current resource conditions, lingering cumulative effects, or the potential for additional impacts.") The second problem, the CWE Report explains, is that Cal Fire operates under the premise that, even if a logging plan may have adverse impacts, "it can be mitigated out of existence by application of a Best Management Practice" found in the Forest Practice Rules. The third problem is that Cal Fire never looks at the watershed as a whole in assessing cumulative impacts. Having reviewed dozens of logging plans, the CWE Report records the damage caused to watersheds when Cal Fire allows the "postage stamp" approach, looking only at a small fraction of the watershed in which the logging plan is located. This "'postage-stamp', or 'parcel-by-parcel', approach, in which only the immediate project area of a single, small timber harvest is ever reviewed . . . does not capture the cumulative influence of multiple harvests over a long period of time in a large, complex watershed." Ultimately, the CWE Report concluded that a process – indistinguishable from the review relied on in all of the past Battle Creek watershed logging plans – "contains no method for recognizing damage across entire ecosystems or watersheds" and "needs to be replaced with a true, watershed-

scale assessment." While the CWE Report was written nearly 20 years ago, each of these problems remains, and can be seen again in the Powerhouse plan at issue here.

B. Powerhouse plan similarly lacks scientific, site-specific data regarding cumulative impacts; therefore, approval would be contrary to law.

The following section will demonstrate that this logging plan lacks the scientific, site-specific evidence required for a cumulative impacts analysis. As such, if Cal Fire were to approve this plan as currently presented (lacking the required elements of a cumulative impact assessment), Cal Fire would be committing an abuse of discretion by failing to proceed in the manner required by law. (Joy Road Area Forest and Watershed Assn v. Cal. Dept. of Forestry & Fire Prot. (2006) 142 Cal. App.4th 656, 674-78.)

Plan page 7 and 209 refer to the "Campbell Creek" watershed. There is no Campbell Creek in the Battle Creek watershed. We presume the plan means the Canyon Creek planning watershed. The plan's lack of even knowing what creeks are in the area does not inspire confidence in the preparer's ability to accurately determine cumulative effects. This plan continues the practices used in the past dozens of plans and 61,000 acres of logging--practices that every plan has stated are causing "no significant adverse impacts" while providing no factual evidence.

Plan pages 139- 155 are the same copied and pasted pages which SPI has put in every plan for over a decade. They contain no verifiable evidence and are not site-specific to this plan, although on page 139 they write that they have "site-specific data and scientific studies on a number of terrestrial and aquatic wildlife species that are incorporated into our individual THPs". Where is it then? Writing baseless sentences such as this does not make them true. In our experience, the small amount of site-specific water quality data SPI presents has been collected at the highest upstream points of SPI's land, making the data worthless for assessing downstream cumulative impacts. We examine some other SPI documents throughout this comment that have been copied and pasted into their plans for years. There is almost nothing regarding wildlife in the upper Digger Creek planning watershed included in the plan, other than generic lists of species which provide no level of understanding how populations are being affected or are changing.

Plan page 7 Item 13 marked the box that the logging operations WILL NOT HAVE A SIGNIFICANT adverse impact on the environment, and Page 167 of the plan presents a box divided into 8 different resources with a question regarding if the project will impact any of the resources and will "have a reasonable potential to cause or add to significant cumulative impacts...". The "no" box is checked for every resource including Watershed, Soil Productivity, Biological, Recreation, Visual, Traffic, Greenhouse Gases, and Wildfire Risk and Hazard. Every one of SPI's past plans has said the same thing. The information we present in this comment (and past comments) shows that there are existing significant impacts to the listed resources, which have been completely ignored in the plan. It's reasonable to assume that further logging from this additional proposed plan will be an additive factor to existing adverse effects.

C. Powerhouse Plan will Affect the Downstream Areas

1. Limiting the Assessment Area in the Powerhouse Plan is an Attempt to Avoid the Required Cumulative Impact Analysis of the Downstream Watershed.

Although the Rules permit "planning watersheds" to be used as a starting point for cumulative watershed assessments, Cal Fire is required to look beyond the planning watershed to ensure all relevant information is considered (such as the greater watershed and fluvial system). 14 CCR § 898; see also East Bay Mun. Utility Dist. v. Cal Dept. of Forestry & Fire Prot. (1996) 43 Cal.App.4th 1113, 1133 ("duty to require supplementations is entirely consistent with the agency's duty under CEQA to use its best efforts to find out and disclose all that is reasonably can").

The small geographic scope used by SPI in this logging plan is exactly the type of inadequate analysis that the cumulative impact assessment is intended to prevent (EPIC v. Cal Dept. of Forestry & Fire Prot. (2008) 44 Cal.4th 459, 525). CEQA requires the scale of the cumulative impact assessment area to be based on the nature of the impacted resource, not the scale of the project (Kings County Farm Bureau v. City of Hanford (1990) 221 Cal.App.3d 692, 722-723).

The following section demonstrates how SPI has tried to avoid a full cumulative impact analysis by limiting the scope of the project, thereby ignoring the devastating cumulative impacts the addition of this plan will have – in combination with prior plans – within the Battle Creek Watershed.

Plan page 139 SPI states: "According to the SNEP analysis, for project planning and management decisions, the scale should be the CALWATER planning watershed units (a subdivision of the major river basins, used by SNEP and delineated by the California Department of Water Resources) (SNEP 1996)."

This appears to be more purposely misleading information in the logging plan. SNEP (Sierra Nevada Ecosystem Project) was a multi-volume, thousands of pages document produced in 1996. SPI's 3 references to it on page 173 list 3 titles which do not exist in the report. As far as we can tell, the titles are headings in the Appendices which include multiple chapters from the report. We can find nothing in SNEP which recommends the use of the CALWATER planning watershed system for practices such as SPI employs or Cal Fire approves; the CALWATER system was in its earliest stage of development in 1996.

According to this USGS link online, https://water.usgs.gov/GIS/metadata/usgswrd/XML/ca_provinces.xml

> "This digital data set was created to provide a context for developing a statewide, comprehensive ground-water monitoring and assessment program as per the requirements of the California State Assembly bill AB599. The development of this data set facilitated analysis and identification of the priority basins and areas outside basins.

This data set was developed from previously developed digital data sets of ground-water basins (California Department of Water Resources, 2002) and watersheds (California Department of Forestry and Fire Protection, 1999)."

AB599 was filed in 2001, 5 years after the SNEP report was released:

http://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=200120020AB599&search_keywords=groundwater

"AB 599, Liu. Groundwater contamination: quality monitoring program.

Existing law declares that groundwater is a valuable natural resource in the state and should be managed to ensure its safe production and its quality. Existing law authorizes specified local agencies to adopt and implement groundwater management plans.

This bill would require the State Water Resources Control Board to integrate existing monitoring programs and design new program elements, as necessary, for the purpose of establishing a comprehensive monitoring program capable of assessing each groundwater basin in the state through direct and other statistically reliable sampling approaches, and to create an interagency task force to identify actions necessary to establish the monitoring program and to identify measures that would increase coordination among state and federal agencies that collect groundwater contamination information. The bill would require the state board to convene a described advisory committee to the task force. The bill would require the state board, in consultation with other specified agencies, to submit to the Governor and the Legislature, on or before March 1, 2003, a report that includes a description of a comprehensive groundwater quality monitoring program for the state."

On Nov. 23rd, 2020 we emailed Cal Fire to ask for the document in SNEP that the plan on page 139 (mentioned above) referred to. On Dec. 2nd we received this reply:*"The original CALWATER digital production occurred during 1993. The current version of the digital boundaries was finalized during 1999, with additional attribute data updated during 2004 (CALWATER version 2.2.1). Some of the assessments described in The Sierra Nevada Ecosystem Project (SNEP) used CALWATER data, which was readily available at the time of the 1996 publication. References to CALWATER appears in several locations in the SNEP reports. The SNEP reference used in the THP refers to SNEP Volume I, page 106, which is part of the Distributed Forest Conditions (DFC) Strategy discussion included in the Management Strategy section of the Late Successional Old-Growth Forest Conditions Chapter (Chapter 6). The DFC strategy distributes forest seral diversity across the landscape, benefitting organisms and ecological functions using a patchy distribution. Existing small patches of late successional forest would be maintained where they occur, and these stands would be evenly distributed across the landscape. The CALWATER planning watershed unit scale is the appropriate planning and management scale for such a strategy.*

Document reference:

Sierra Nevada Ecosystem Project (SNEP). 1996. Final report to Congress. Vol. I, Assessment Summaries and Management Strategies. Wildland Resources Center Report No. 37. Centers for Water and Wildland Resources, University of California, Davis."

We reviewed the SNEP chapter mentioned in the reply, which is about "Late Successional Old-Growth Forest Conditions" which does not describe SPI's land at all. The map shows the study areas as only national forest lands (which are managed completely differently than industrial timberland) and the text states: "The objective of the DFC strategy is to meet overall forest goals by creating a forest landscape on the east side of the Sierra Nevada (primarily east-side pine)".

The industrial timberland in Battle Creek and most of the Sierra Nevada is on the **west** side of the mountain range, does not consist of east-side pine, and very little of it is in old-growth condition due to logging throughout the 20th century. This SNEP Chapter has no relevance to SPI's practices and the use of one sentence from it to justify decades of utilizing misleading, reductive assessment areas is contrary to the intent of environmental protection laws.

SPI has chosen to confine their assessments to the small planning watersheds for many years and Cal Fire has approved thousands of plans in California using this faulty assessment system. In past plans and approvals within Battle Creek watershed, neither SPI nor Cal Fire have ever provided adequate justification, supported by substantial evidence, as to why they refuse to look for water quality impacts downstream of the individual plans beyond the planning watershed boundaries. As a result, both the past logging plans and this current one fail to inform the public and decision makers of the true environmental consequences which are occurring.

The practice of the misuse of the planning watershed delineations has prevented any meaningful cumulative impact analyses and allowed many of California's important watersheds to be over-cut. There is no excuse for this and it must stop. Cal Fire's approvals are not upholding the laws or the intent of the laws, and are not preventing or repairing the well-known significant adverse effects that were detailed in the SNEP report and throughout many scientific studies.

The SNEP report is the antithesis of an approval of SPI's practices. Cal Fire has the report in their files, but apparently neither they, nor SPI, have ever read any of it. In Volume I Chapter 8, "Watersheds and Aquatic Diversity" the report writes:

"CRITICAL FINDINGS

Aquatic Habitats: The aquatic/riparian systems are the most altered and impaired habitats of the Sierra.

Stream Flow: Dams and diversions throughout most of the Sierra Nevada have profoundly altered stream-flow patterns (timing and amount of water) and water temperatures, with significant impacts to aquatic biodiversity.

Riparian Status: Riparian areas have been damaged extensively by placer mining (northern and west-central Sierra) and grazing (Sierra-wide), and locally by dams, ditches, flumes, pipelines, roads, timber harvest, residential development, and recreational activities.

Sediment: Excessive sediment yield into streams remains a widespread water-quality problem in the Sierra Nevada.

Water Quality: Major water-quality impacts on the Sierra are (1) impairment of chemical water quality downstream of urban centers, mines, and intensive land-use zones, (2) accumulation of near toxic levels of mercury in many low- to middle-elevation reservoirs of the western Sierra, (3) widespread biological contamination by human pathogens (especially Giardia), and (4) increased salinity in east-side lakes as a result of water diversions.

Introduced Aquatics: Introduction of non-native fishes (primarily trout) has greatly altered aquatic ecosystems through impacts on native fish, amphibians, and invertebrate assemblages.

Amphibian Status: Amphibian species at all elevations have severely declined throughout the Sierra Nevada.

Anadromous Fish: Anadromous fish (chinook salmon, steelhead), once native to most major Sierran rivers north of the Kings River, are now nearly extinct from Sierran rivers.

Aquatic Invertebrates: Local degradation of habitats has led to significant impacts on aquatic invertebrates, which make up the vast majority of aquatic species in the Sierra Nevada.

California's economy derives enormous benefits from water diverted from the streams, rivers, and lakes of the Sierra Nevada. A major cost associated with these benefits has been deterioration of the biotic integrity and sustainability of the aquatic systems, as reflected in declines in the distribution and abundance of native aquatic and riparian organisms. Water determines the distribution and abundance of many plants and animals throughout the Sierra Nevada by shaping and providing habitat. Lakes and streams support rich communities of native organisms both in the water and in adjoining riparian areas. These water bodies also support cities, farms, and industries within and distant from the mountains...Development of streams and other resources of the Sierra Nevada over the past 150 years has met the downstream demands of society throughout California but has impaired the quality and availability of water for both ecological and social needs in many parts of the mountain range."

Also in SNEP Volume III, Chapter 2 "Cumulative Watershed Effects: Applicability of Available Methodologies to the Sierra Nevada" Berg et al. wrote: "Only recently has formalization of concerns gone beyond the effects of site-specific, single impact land management. Gooselink and Lee (1989), however, point out that the roots of the issue can be viewed as a communal response to accumulating individual acts of environmental degradation, none particularly large or damaging, but when taken together sum to significant and potentially dramatic impacts. Hardin (1968) described this principle elegantly as the tragedy of the commons: the unrestricted use of a common resource by individuals to maximize individual profits, leads to a loss of the resource for both individuals and the public."

Battle Creek-specific documents that include cumulative impacts aspects related to the SNEP findings detailed above are: Kier 2003, Kier 2009, Myers 2012, Henkle 2016, Pacific Watershed Associates 2017/2018, Lewis 2019, Battle Creek Watershed Conservancy 2019. All of these relevant reports are conspicuously ignored in the Powerhouse plan at issue, as well as having been ignored in past plans and approvals.

This plan does not include the impacts of past projects, instead confining itself to the reductive area of a planning watershed and essentially considering its impacts alone, while willfully ignoring Battle Creek specific research. The Battle Creek Watershed Based Plan (2019), overseen by the Central Valley Regional Water Board and paid for with State funding, details impacts of past projects and occurrences in the area and in the downstream drainages which will be affected by this plan. Here are some examples in the document which support our concerns:

According to the geology map on page 8 of the 2019 Battle Creek Watershed Based Plan (WBP), part of the planning watershed in this plan has rhyolitic soil. Rhyolitic soil is known to be highly erosive. We see no discussion of this in the THP. In fact, this Powerhouse plan presents misinformation regarding the EHR (erosion hazard rating) on pages 224-225, and 265-269, rating the EHR as mostly low. There is no substantive discussion of the basic methodology used to determine the EHRs such as who was the person/what training the person had, how much of the area was actually surveyed, or when and how often, what specific measurements were collected in the field, or how the ratings were arrived at. This lack of substantive evidence regarding methodology is evident throughout this, and past,

plans which leads to the conclusion that the ratings are just unsourced opinion on paper with no connection to the reality of the land.

The Digger THP (2-03-158) is not listed in the "Past Projects" section of this plan, but some of its units abut the projected units to be logged by this plan (this is not shown on this plan's maps). On page 244 of the Digger THP file there is a Cal Fire letter that states there were active operations in 2011. In the Digger plan the Review Team wrote: "Published geologic mapping shows the southern part of the THP area 5 ~(south of South Fork Digger Creek) to be underlain by rhyolitic rocks. These rocks are known to weather to soils that (a) are highly erodible, and (b), in a manner similar to decomposed granite (DG) soils, may potentially erode at rates exceeding those that would be expected from the calculated erosion hazard rating (EHR). Sediment resulting from such erosion could then be delivered to downslope streams. Timber harvest operations have the potential to accelerate the erosion and sediment delivery rates significantly above the pre-harvest rates."

(See Figures 25 to 34 for some of the adjacent Digger plan's units which this plan will cut next to.)

The EHR rating tables on pages 265-268 of the THP appear to be generated by a computer program of some sort. The tables use specifically selected, repeated numerical designations, so are purely speculation. The tables do not mention rhyolitic soil at all.

WBP Pages 8-11 detail the loss and change in area of forest cover between 1985 and 2017. (A significant effect.)

WBP Page 12 describes Beneficial Uses and Sediment Stresses and states "beneficial uses of any specifically identified water body generally apply to all of its tributaries." In this plan, that would specifically pertain to Digger Creek and its downstream drainage into Battle Creek.

WBP Page 12-13 spells out the water quality objectives encoded in the Basin Plan. BCA's water quality data collection sites are all downstream of this plan; they show exceedances of turbidity, temperature, and pH standards (Lewis et al. 2019, Lewis 2018, Lewis 2016, CEDEN).

WBP Page 15 discusses that there has been some recovery, but a large amount of sediment is still being mobilized into the mainstem of Battle Creek, which is in a "likely altered" condition. (A significant downstream effect.)

WBP Page 16 states: Digger Creek has "the highest estimated rates of sediment delivery" and "The greatest sediment delivery contributions are spread throughout the mid to upper elevations" which encompasses the large contiguous block of timberland detailed in Figures 1 and 2. This plan is an additive factor to the past effects. This is another significant effect which is completely ignored within the Powerhouse logging plan.

WBP Page 19 states: Rhyolitic soils within the Ponderosa fire footprint are confined to Northern slopes of the South Fork Battle Creek watershed (lower South Fork and Panther Creek HUC 12's) and the Digger Creek watershed. Terraqua (2018) concluded that wildfire, wildfire prevention measures (fire lines) timber harvest activities, and roads have all

contributed to the initiation of landslides in recent years. This is another significant effect which is completely ignored within the Powerhouse logging plan.

WBP Page 24 states "Areas within the Upper and Lower South Fork Battle Creek, Panther Creek, and Digger Creek indicate the highest relative sensitivity to combined factors of erodibility, landslide potential, and chronic road sediment delivery." (A significant effect.)

Our water quality data has been reviewed by 6 hydrologists, as well as the monitoring coordinator at the State Water Board (BCA QAPP 2019). The Battle Creek Watershed Based Plan document reinforces our water quality data findings and research paper (Lewis et al. 2019), and is additional evidence of the concerns we have been raising for years regarding the significant impacts which are occurring. This plan excludes our recent research paper, the Watershed Based Plan, and the other documents that speak of the ongoing declines in the watershed. Most of the declines are occurring downstream of this proposed project (Battle Creek Watershed Conservancy 2019, Bottaro 2019, Lewis et al. 2019).

There is a new example of SPI's evasion of relevant information regarding the Battle Creek watershed added to this logging plan, as follows:

Plan page 216-217 SPI has inserted an erroneous paragraph into this plan on these pages regarding the Lewis et al. research paper that was published online in 2018 and in the scientific journal "Environmental Management" in 2019. This paper analyzed BCA's water data that began being collected in 2009. We provided evidence to Cal Fire and asked for the paragraph to be removed, but Cal Fire refused (Battle Creek Alliance "Erroneous paragraph in THP letter (2020)" and Cal Fire Ramaley "Erroneous paragraph email, (2020)".) The inclusion of this paragraph in this logging plan is another attempt by SPI to invalidate evidence that demonstrates their ongoing practices have significant adverse effects. Cal Fire's acceptance of it is an extension of their past practices which have continuously evaded their responsibility to uphold environmental laws which would serve to maintain and protect functional ecosystems and safeguard the public trust.

Technical Rule addendum No. 2 states under Section C "Identification of Information Sources" that Records Examined can include "k. Relevant watershed or wildlife studies (published or unpublished)". As we detail later, this plan includes many references to information from far away from this plan's area. Yet, it includes no references to the documents which are actually about the area within, adjacent, and downstream of the Upper Digger Creek planning watershed that detail significant adverse impacts occurring. This is materially misleading and insufficient for an informed decision making process.

The following figures (Figures 3 to 7) demonstrate the progression of what the evasive practices of SPI and Cal Fire have done to the Battle Creek watershed since the 1996 SNEP report was released, the report which SPI has deceptively cited as supporting their practices.

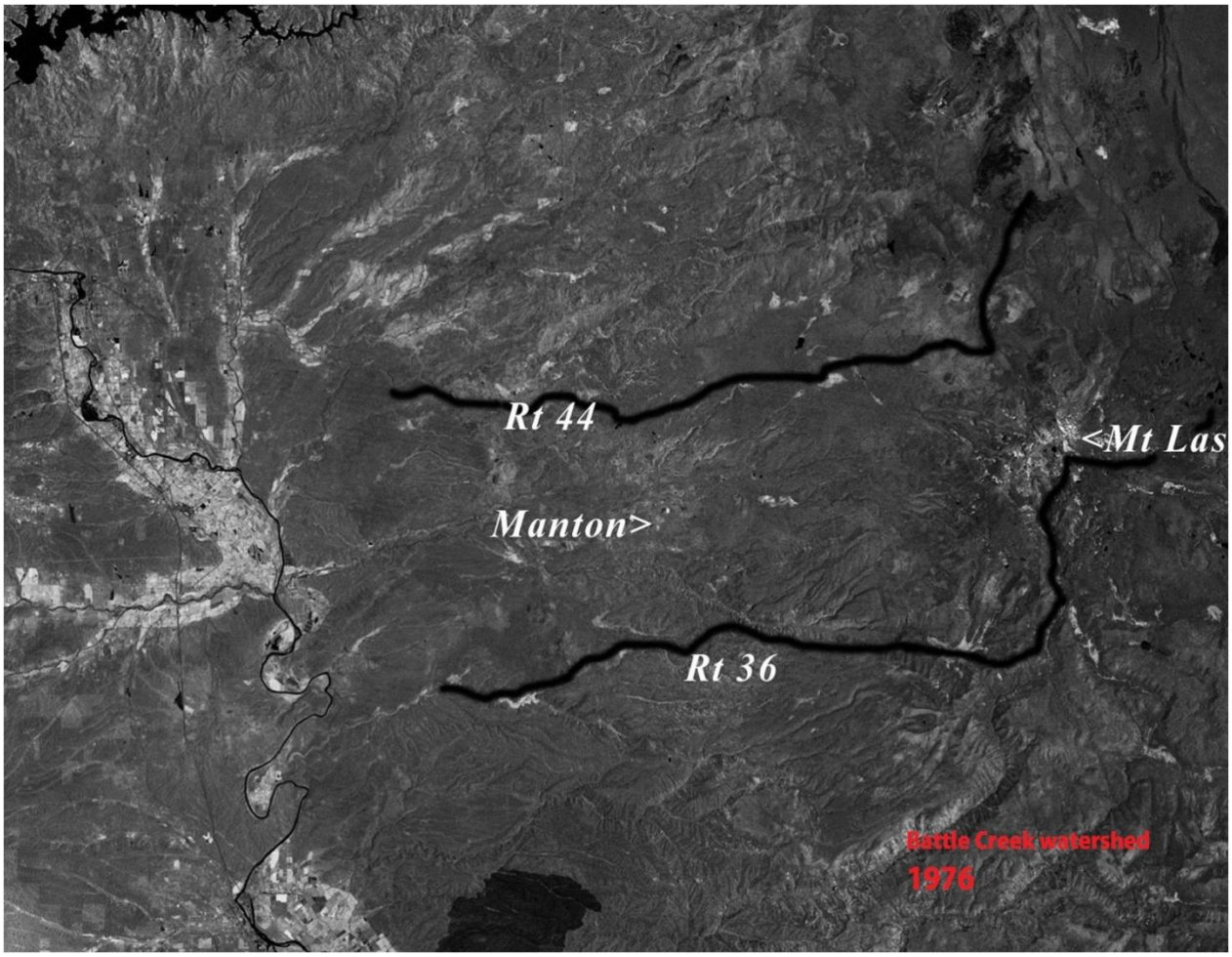


Figure 3. Battle Creek watershed in 1976. Hwy 44 and 36 are the approximate boundaries of the watershed.

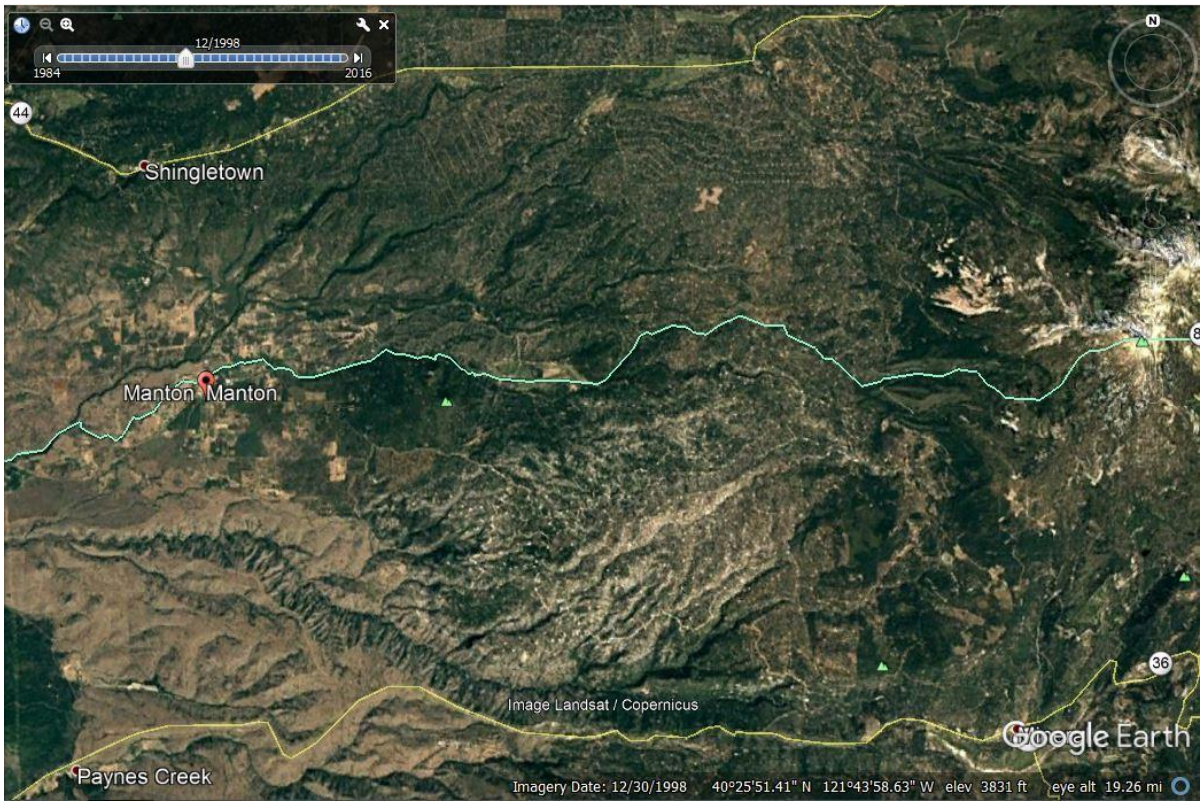


Figure 4. Battle Creek watershed in 1998, before the clearcuts began to appear. The blue line is Digger Creek, the boundary between Shasta and Tehama counties.

Figure 5. Battle Creek watershed in 2004. The brown holes which are ~20 acre clearcuts began to appear.

Figure 6. Battle Creek watershed in 2012, before the Ponderosa Fire.

Figure 7. Battle Creek watershed in 2017 with 2012 Ponderosa Fire imprint. 2017 is the most recent Google Earth image available.

All of the plans shown in Figures 3 through 7 were submitted and approved as having no significant, adverse impacts. None of the plans included one measurement taken of downstream water quality, or populations of plants, birds, animals, amphibians, and fish, or changes in climate.

Page 169 of the plan writes that "The assessment area was chosen because this [planning] watershed is of sufficient size to analyze cumulative biological and hydrological effects..."

This is an incomplete and misleading portrayal of how fluvial systems work. Water quality impacts do accumulate in the planning watershed watercourses but they do not stay confined there. Sediment moves during large storm events and that is when cumulative impacts become active and move downstream, outside of any smaller planning watershed. Our Citizen's Water Quality Monitoring Project has found evidence of this for over 10 years now. "*The data reveal strong associations of turbidity with the proportion of area harvested in watersheds draining to the measurement sites.*" (Lewis 2019, Figure 8.) There is more discussion of our evidence, and other entities' evidence, in our reference documents which have been supplied to the Cal Fire office. Our reference file is incorporated by reference into this comment. Some documents mention the data gaps which exist. This is a problem, but does not mean that this plan which has no evidence in it to prove anything it asserts, should be approved. BCA is a small, little-funded organization and cannot perform the large studies that cost hundreds of thousands of dollars that many reports have recommended. But those large studies have never been carried out, while we have accomplished collecting the data we are able to for over 10 years. Our downstream sites, which are downstream of this plan's planning watershed, show elevated turbidity, temperature, and pH and exceedances of the numerical limits of the Water Board's Basin Plan.

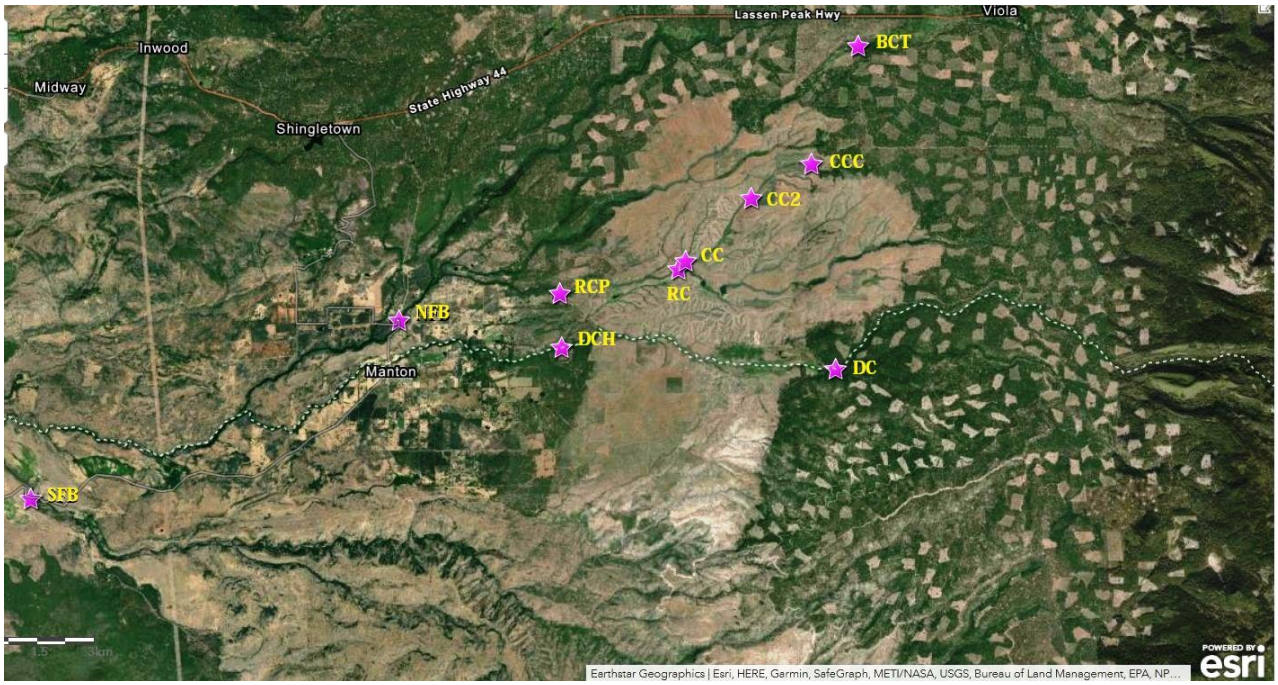


Figure 8. Purple stars mark BCA sampling sites in the Battle Creek watershed where data has been being collected since 2009. Digger Creek (white dotted line) is the boundary between Shasta and Tehama counties in this part of the watershed. SFB= south fork Battle Creek, NFB= north fork Battle Creek, RCP= Rock Creek Ponderosa, DCH= Digger Creek home, DC= Digger Creek, RC= Rock Creek, CC= Canyon Creek, CC2= second Canyon Creek, CCC= Canyon Creek culvert, BCT= Bailey Creek top.

Along with sampling data, we photograph each of our water monitoring sites. Figures 9 to 15 are a few visual comparisons of tributary creeks in Battle Creek watershed. All of our lower downstream monitoring sites have the same physical changes demonstrated in Figures 10, 11, 13, and14.

Figure 9. Above is a photo of our highest elevation site in January 2020, which is on Bailey Creek (BCT). Normally a reference site would be chosen by having no disturbance, but all the sites which are accessible to us have some disturbance. This site has the least. This photo demonstrates how little sand (known as fine sediment) is present, how clear the water is, and how the substrate is composed of loose rocks not embedded by sediment.

Figure 10. This is our Rock Creek (RC) site on the same day in January 2020. Here can be seen the sand (fines) embedding the rocks in the substrate. This site has changed significantly since we began our water quality sampling program in 2009. It used to be similar to the high Bailey Creek site.

Figure 11. This is our north fork Battle Creek site in January 2020. The sandy beach on the edge of the creek that extends into the streambed was not there in the past but has persisted for years now.

Figure 12 . Our upstream Digger Creek (DC) site on Jan. 26th, 2020. (See map figure 8.) This site has less disturbance above it than our DCH site, but is downstream of this potential logging plan. It measured 25.4 NTUs. There was 1.44" of rain that day (CDEC Shingletown station).

Figure 13. Our lower Digger Creek site (DCH) on Jan. 26th, 2020. This site is approximately 4 miles downstream of DC site in Figure 12. It measured 53.5 NTUs, an increase of 111% over the upstream site. Stream turbidity is highly influenced by amount of precipitation and its intensity, hence there is little turbidity if there is little rain. The turbidity levels between sites during heavier precipitation show marked differences in relation to how much logged land there is upstream of a site.

This writer has been wading the creeks since 1989, and personally saw what occurred in the 1997 flood which is discussed in logging plans and other documents. After that flood which cleared the banks of the streams for about 5 feet on each side, the rocks in the streambeds continued to be loose and have very little sand present. The substrate began changing in the mid-2000s as clearcutting upstream became prevalent, and escalated post-Fire and post- tens of thousands of acres of salvage logging that were cut after the fire. (See Figures 3-7.) The physical evidence in the streams shows significant changes have occurred, have persisted, and have not been prevented or mitigated by SPI's practices. The Appendix of Technical Rule Addendum No. 2 covers these effects under A. Watershed Resources, particularly 1.a.: "Sediment-induced CWEs occur when earth materials transported by surface or mass wasting erosion enter a Watercourse or Watercourse system at separate locations and are then combined at a downstream location to produce a change in water quality or channel condition. The eroded materials can originate from the same or different Projects."

There is no evidence in the Powerhouse plan that anyone from SPI or the regulatory agencies spent an appreciable amount of time looking for any of these significant adverse effects downstream of the plan area.

Figure 14. Our south fork Battle Creek site in 2020. Sediment deposition may be seen on the bank in the lower right hand side of the photo. Significant channel modification has also occurred right above the sediment in the form of many more (and larger) boulders than in the past.

Figure15. Our south fork Battle Creek site in 2013 for comparison to the 2020 photo. There was neither as much prevalent sediment deposition nor channel modification yet.

2. Plan Fails to Assess Cumulative Effects on the Water Cycle

The very foundation of ecosystem health is the water cycle, yet there is no discussion in the plan of the cumulative effects that the vast changes to the landscape are producing.

Removing forest cover opens the land to more solar radiation, producing land degradation effects by drying out the soil more quickly. Logging leaves combustible slash about while drying out the cutover and surrounding area because forests create their own microclimate by releasing water vapor (evapotranspiration). The ongoing practices this plan continues contributes to climate change, produces land degradation, and impacts the water cycle by:

- increasing soil and air temperature (impacts: less rain and humidity→ increased fire danger→ fire leads to more loss of forest cover)
- increasing erosion (impacts: soil loss→ water pollution from point- and non-point sources→ degradation of aquatic habitat→ population loss in aquatic species)
- causing loss of soil fertility from loss of nutrients and organic matter (impacts: less vegetation growth → less evapotranspiration→ less atmospheric moisture transport→ higher, drier air and soil temperatures→ more vegetation death and increased fire probability)

As far as we are aware, there has been no attempt at the local, regional, or state level to prevent or constrain these effects, or to collect factual evidence to determine what effects are occurring. There is no general or site-specific evidence provided in this plan regarding water cycle and climate change cumulative effects from logging, nor has there been in the multitude of past plans Cal Fire has approved.

Lukovic et al. (2021) observes: "Californian hydroclimate is strongly seasonal and prone to severe water shortages. Recent changes in climate trends have induced shifts in seasonality, thus exacerbating droughts, wildfires, and adverse water shortage effects on the environment and economy... We discover that the onset of the rainy season has been progressively delayed since the 1960s, and as a result the precipitation season has become shorter and sharper in California."

Ellison et al. (2017) presents the following figure to illustrate the interconnected function of forests to the water cycle (Figure 16):

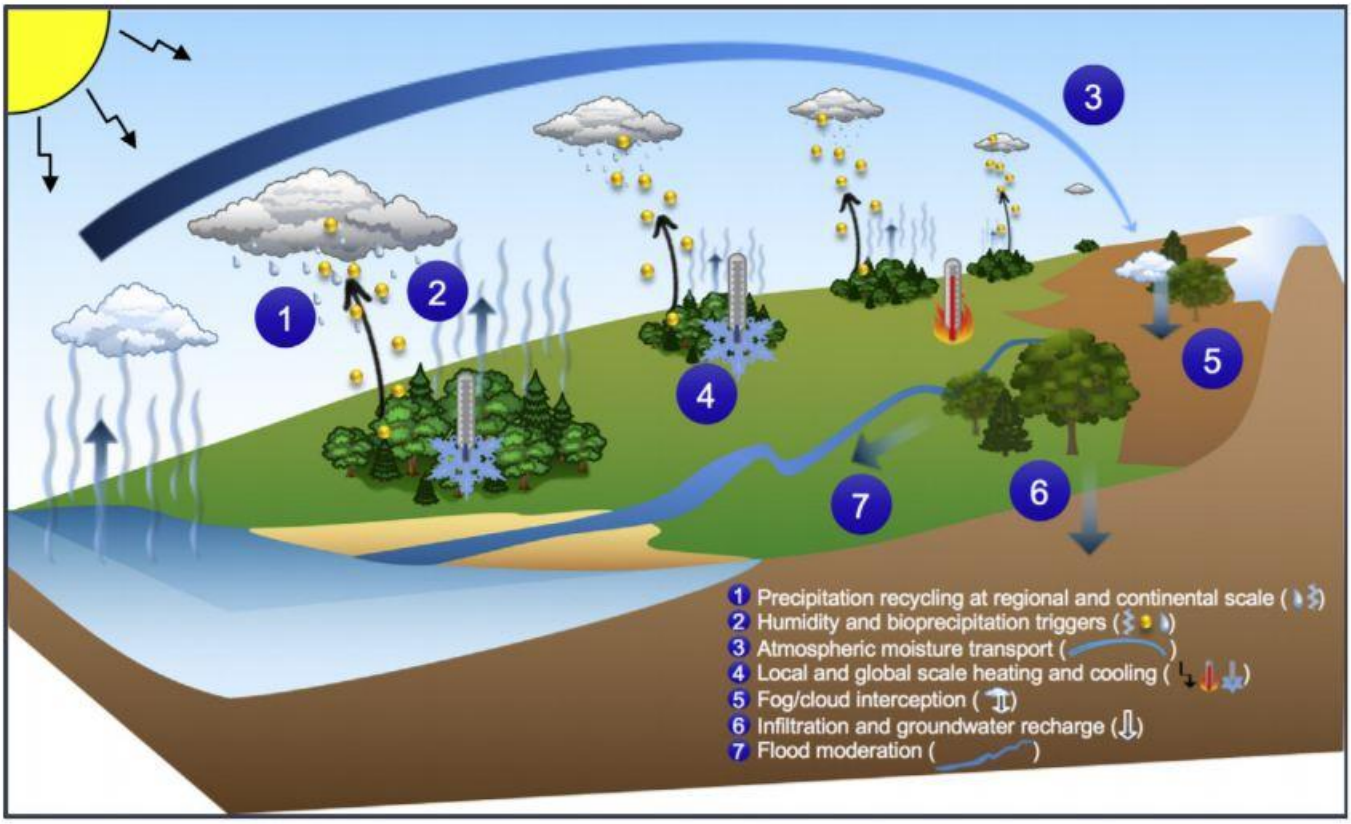


Figure 16. Ellison et al. 2017: "Effects of forests on water and climate at local, regional and continental scales through change in water and energy cycles. (1) Precipitation is recycled by forests and other forms of vegetation and transported across terrestrial surfaces to the other end of continents. (2) Upward fluxes of moisture, volatile organic compounds and microbes from plant surfaces (yellow dots) create precipitation triggers. (3) Forest-driven air pressure patterns may transport atmospheric moisture toward continental interiors. (4) Water fluxes cool temperatures and produce clouds that deflect additional radiation from terrestrial surfaces. (5) Fog and cloud interception by trees draws additional moisture out of the atmosphere. (6) Infiltration and groundwater recharge can be facilitated by trees. (7) All of the above processes naturally disperse water, thereby moderating floods."

Ellison further explains: "By evapotranspiring, trees recharge atmospheric moisture, contributing to rainfall locally and in distant locations. Cooling is explicitly embedded in the capacity of trees to capture and redistribute the sun's energy (Pokorný et al., 2010). Further, trees' microbial flora and biogenic volatile organic compounds can directly promote rainfall. Trees enhance soil infiltration and, under suitable conditions, improve groundwater recharge. Precipitation filtered through forested catchments delivers purified ground and surface water (Calder, 2005; Neary et al., 2009)."

Pokorny et al. (2010) wrote: "Ecosystems use solar energy for self-organisation and cool themselves by exporting entropy to the atmosphere as heat. These energy transformations are achieved through evapotranspiration, with plants as 'heat valves'... While global warming is commonly attributed to atmospheric CO2, the research shows water vapour has a concentration two orders of magnitude higher than other greenhouse gases. It is critical that landscape management protects the hydrological cycle with its capacity for dissipation of incoming solar energy."

This plan fails to provide any assessment or mitigation for these ongoing cumulative impacts that affect lives locally, regionally, nationally, and internationally. Barnosky et al.

2012 wrote of these problems: "Localized ecological systems are known to shift abruptly and irreversibly from one state to another when they are forced across critical thresholds. Here we review evidence that the global ecosystem as a whole can react in the same way and is approaching a planetary-scale critical transition as a result of human influence. The plausibility of a planetary-scale 'tipping point' highlights the need to improve biological forecasting by detecting early warning signs of critical transitions on global as well as local scales, and by detecting feedbacks that promote such transitions. It is also necessary to address root causes of how humans are forcing biological changes."

There are many studies available throughout science that pertain to these effects. The availability of science that documents well-understood processes within the water cycle makes the absence of any discussion or consideration of the cumulative effects that this plan increases even more disturbing.(Some Battle Creek specific documents that include cumulative impacts aspects are: Kier 2003, Kier 2009, Myers 2012, Henkle 2016, Pacific Watershed Associates 2017/2018, Lewis 2019, Battle Creek Watershed Conservancy 2019.)

Battle Creek watershed is part of California's Mediterranean climate, defined as consisting of hot, dry summers and cool wet winters. The disruption from ongoing climate change, coupled with the loss of thousands to millions of acres of canopy cover, has produced lengthier hot and dry seasons and fire seasons both here and in California in general, as documented in Williams et al. 2019, and Williams et al. 2020. There is less snow than in the past. Droughts and low water years have been more frequent and extreme in the first 20 years of the 21st century, yet there is no mention in this plan, or past plans, of how intricately linked forests are with the water cycle (Fischer et al. 2014,EPA 2017, Vose et al. 2017, Cook 2018, CDEC 2004-2020).

On page 169, the plan lists the precipitation average as 50". The CDEC station in Shingletown, situated near Highway 44 adjacent to SPI's land, has precipitation data beginning in 2004. As may be seen in the file BCA submitted, "CDEC 2004-2020", the average has been below that. Eight of the years each had less than 40" of rain with an average of 35". The 2019-2020 water year had only 33.64" of rain, with 17.84" by Feb. 15th, 2020, even though there was no rain at all in February. As of Feb. 15th, 2021 there has only been 15.49" of rain. It appears this water year will be another dry year in the ongoing sequence, which this plan fails to acknowledge or address as an important cumulative impact aspect. Ludovic et al. (2021) discuss ongoing weather pattern alterations in California and show a later and shorter rainy season.

Figure 17 is a graph of the flow (cfs) at the CDEC Battle Creek station which covers 2011 to March 1st, 2021. It illustrates the lack of water in 2020 and currently in 2021. The creek levels have rarely been above summer level flows from June 2019 to currently in 2021. Our comments on the 2017 Artemis logging plan and the 2019 Rio Gatito plan both contain additional graphs which document water temperature increases as well. (See also Lewis 2016, " An Analysis of Water Temperature and the Influences of Wildfire and Salvage Logging in the Battle Creek Watershed, northern California.")

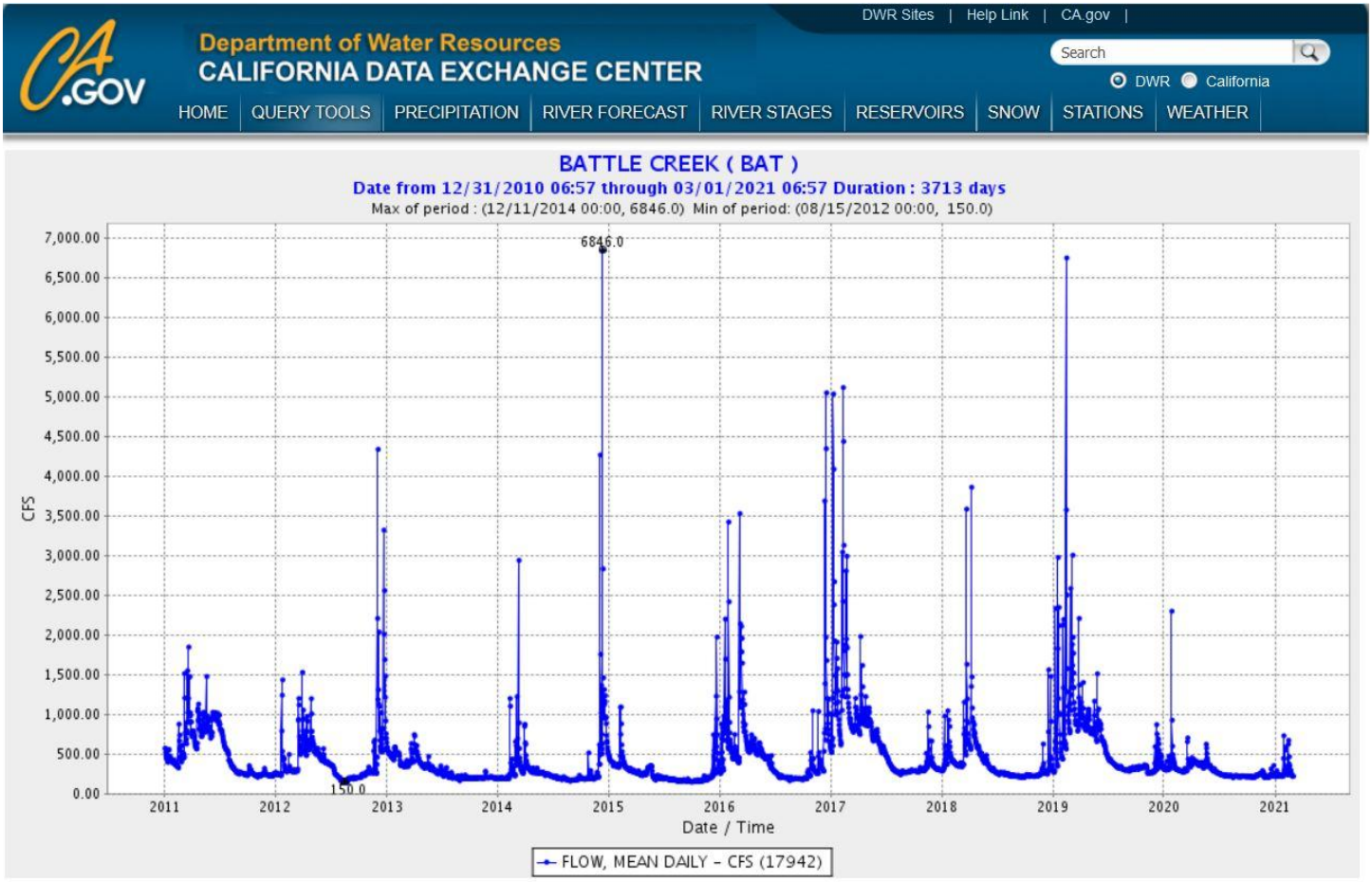


Figure 17 . The mean daily flow at the CDEC Battle Creek station from 2011 to March 1st 2021, downstream of this plan. The creek levels have rarely been above summer level flows between June 2019 and March 2021.

Beginning on page 301 SPI presents maps of the area of this logging plan. As has been SPI's consistently misleading practice for years, the maps show only the proposed units and show none of the past logging that abuts them. This practice is another attempt to circumvent environmental protection laws by providing only insufficient and misleading information.

The map in Figure 18 is an honest example of what the ground conditions are in reality. Some of the proposed units of this plan, colored orange, abut past logged areas (Willow Spring and Digger THPs), essentially creating solidly logged areas of hundreds of acres. This combination of more logged units added to existing ones create larger places in the landscape with the significant adverse effects associated with water cycle disruption, habitat fragmentation, higher heat and less humidity, and homogenous and flammable ponderosa pine tree plantations.

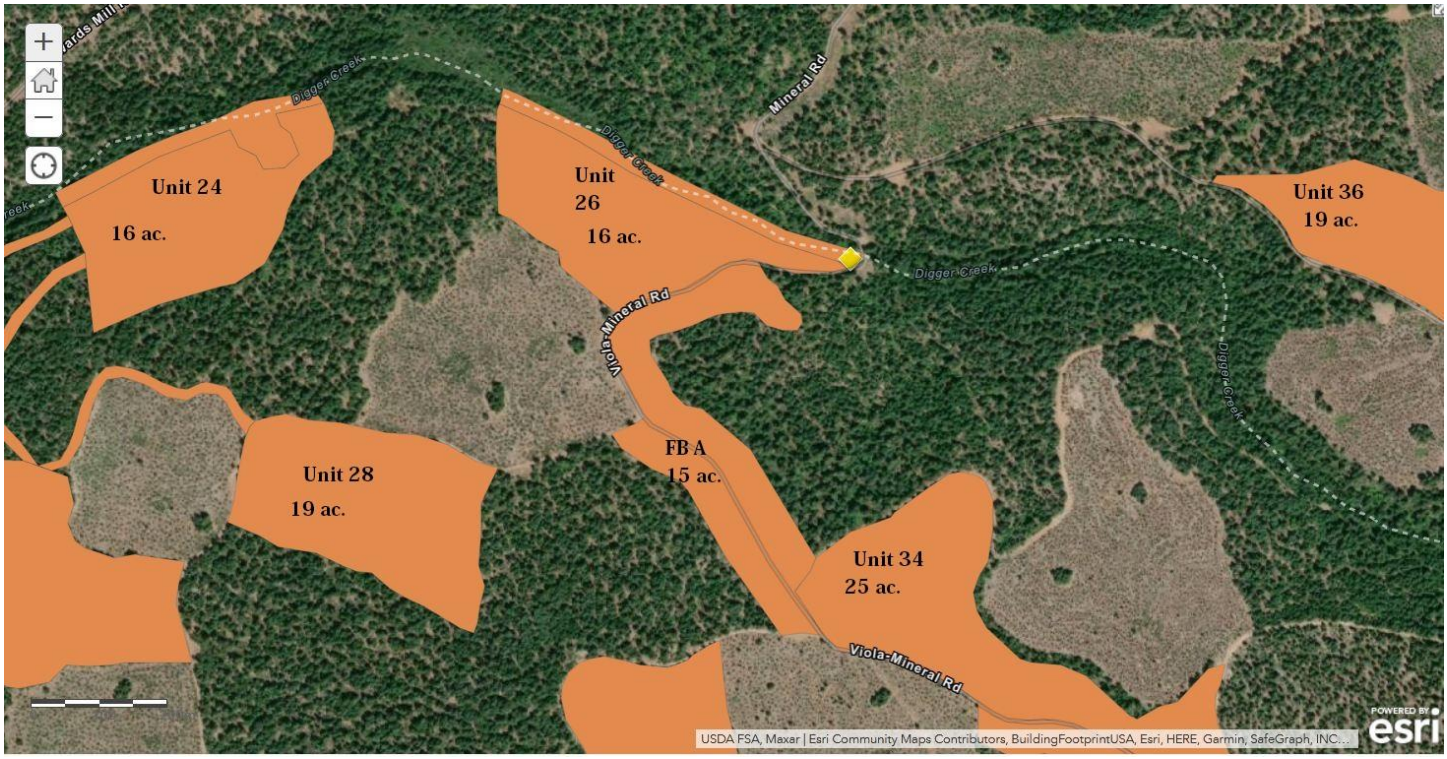


Figure 18. Some of the proposed units of this plan (in orange), abutting past units from the Willow Spring THP. These adjoining units from past plans are not shown on the plan's maps.

Figure 19 is a map of the same area that the plan provides on page 301. Providing maps that do not disclose past logging has been SPI's practice in past plans and is continued in this plan. The reality of the ground conditions is deceptively misrepresented in this plan, subsequently failing to provide a factual representation of cumulative impacts.

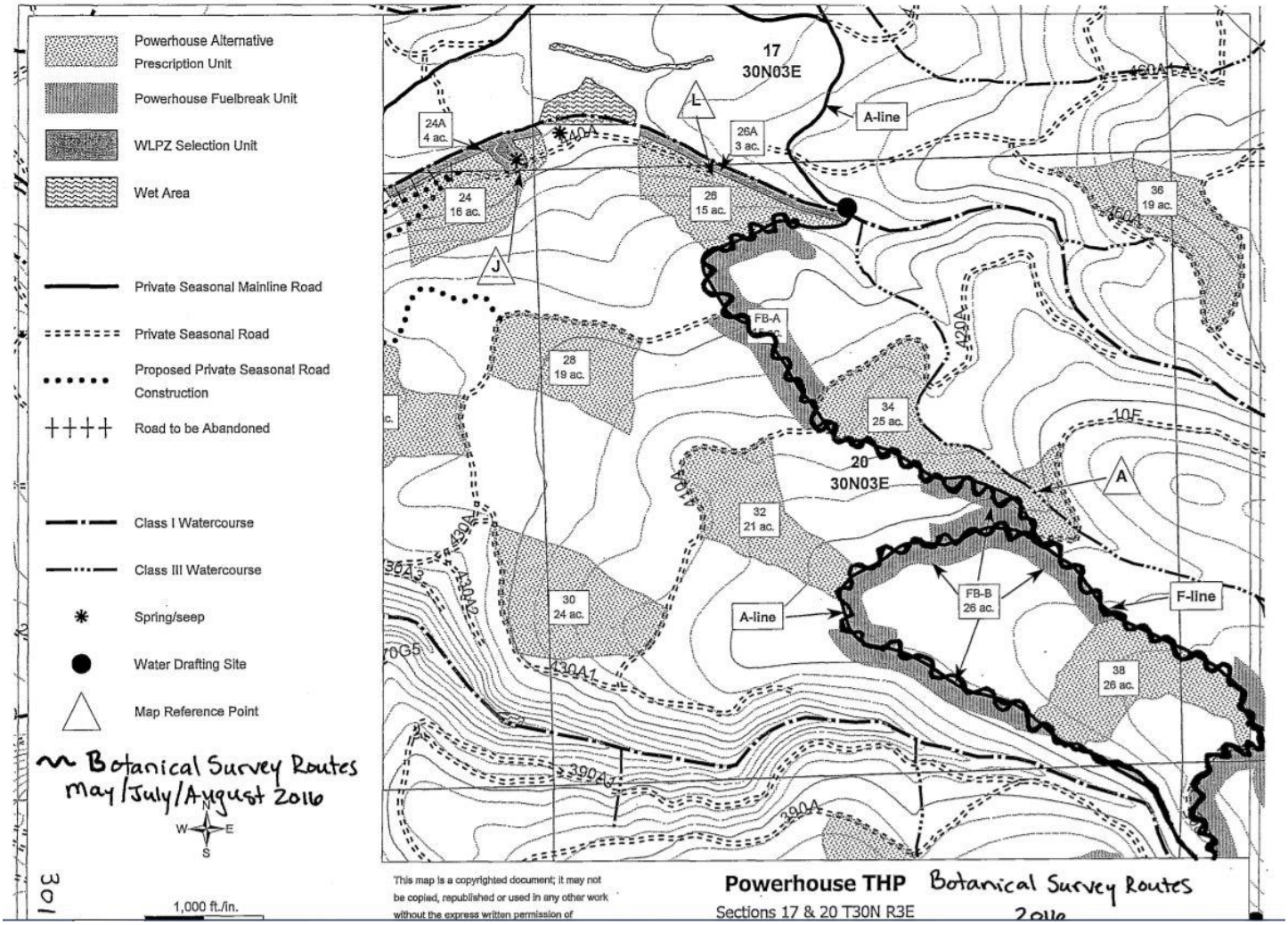


Figure 19. One of this plan's maps which fails to disclose past logging which is adjacent to the proposed units. This has been the common practice in past plans also.

Figure 20 shows the Rio Gatito logging plan (approved in April 2020) in red and this additional proposed plan in orange. Page 216 of this plan dismisses the Rio Gatito plan as being "a mile away" as if downstream cumulative impacts are defined by a distance. They are not. Both of these plans drain to tributaries of Battle Creek and both are upstream of planning watersheds that are designated as "Threatened and Impaired/Anadromous Salmonid Protection".

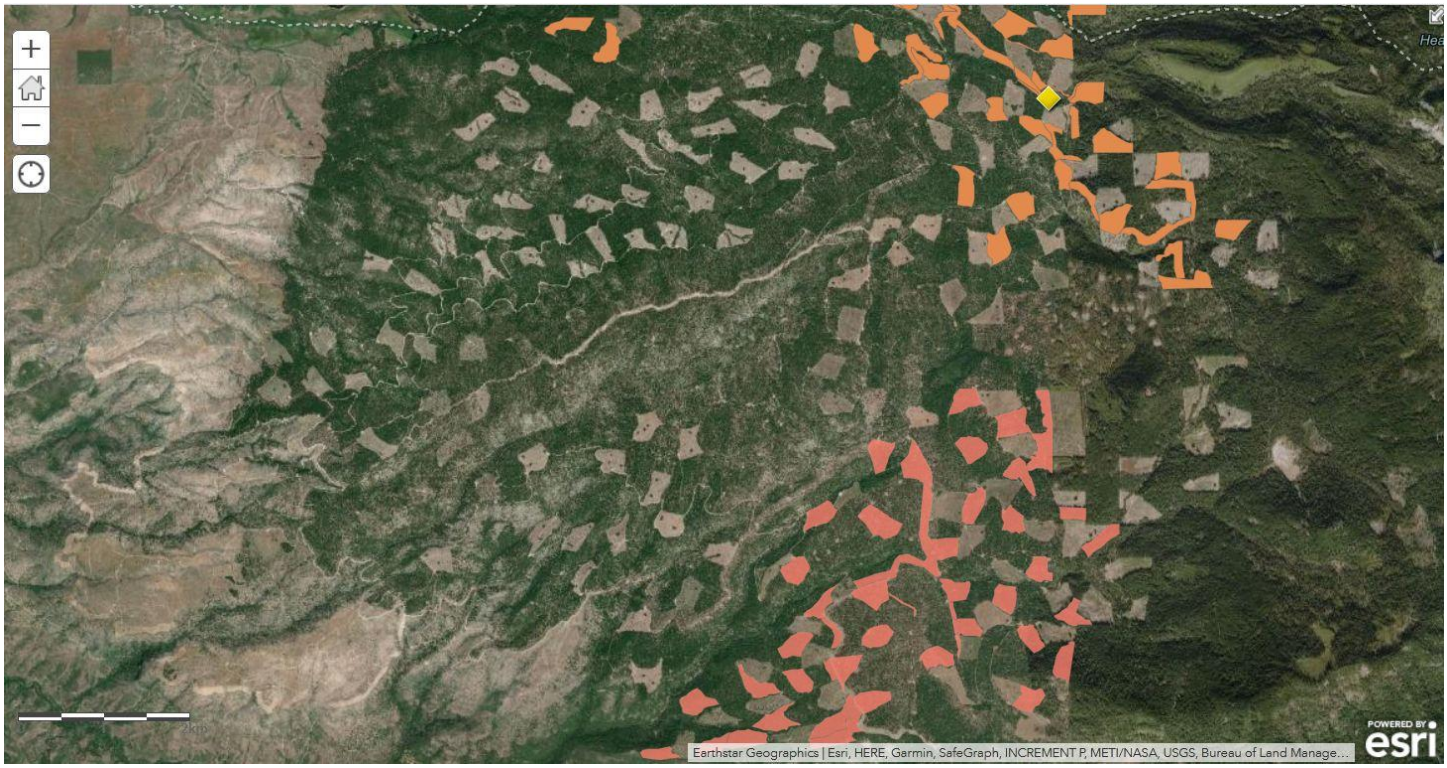


Figure 20. Some of the Powerhouse units are shown in orange. Red units are the Rio Gatito plan, approved in April 2020. The Rio Gatito plan was approved as having "no significant effects"; every single past plan has been approved as having no adverse impacts.

3. Cumulative Watershed Impacts Must Include Analysis of Past Logging Effects

Statistical hydrologist Jack Lewis wrote an expert opinion letter in 2018 regarding the earlier submission of this plan and known cumulative watershed impacts. He stated: "Processes linking clearcutting to surface erosion and changes in turbidity include (1) destruction of herbaceous cover, (2) exposure of bare soils to raindrop impacts, (2) compaction and destruction of soil structure, (3) reduced infiltration, (4) delayed revegetation from herbicides, (5) increased overland flow leading to sheet erosion, rilling and gullying, (6) delivery of augmented overland and subsurface flows to erodible road cutbanks, (7) erosion of roadside ditches from increased surface runoff, (8) reduced evapotranspiration augmenting subsurface flows, (9) erosion of subsurface pipes, (10) loss of soil cohesion due to reduction in the subsurface root network, (11) increased blowdown and rootwad upheaval in the WLPZ (12) heavy logging equipment and increased truck traffic, especially during wet conditions, (13) expansion of the road network to facilitate timber access and hauling, (14) mass wasting of roads and hillslopes due to augmented pore water pressures, (15) culvert failures due to increased debris-laden runoff. No amount of care in executing a THP can eliminate all these processes. The data suggest that past salvage logging as well as clearcutting, which has become routine practice in the area, has impacted turbidity in Digger Creek and other Battle Creek tributaries."

Lewis wrote of further linkages regarding water temperature: "Recognizing the current highly impaired condition, no project should be approved that could reasonably add to those effects. While it is difficult to quantify, there can be little doubt that more clearcutting will add to those effects...

Temperatures high enough to eliminate all salmonids (>22-24°C) are now common during the summer in lower Digger Creek as well as in nearby Rock Creek, Canyon Creek, and the South Fork of Battle Creek. All of these overheated streams create a cumulative impact on the main stem of Battle Creek. Harvesting with riparian buffers should moderate stream temperature increases and changes to riparian microclimate, but substantial

warming has nevertheless been observed in many studies of harvesting near streams with both unthinned and partial retention buffers (Moore et al., 2005).
Forest harvesting increases advection and sensible heat exchange from clearings to the riparian zone, and conduction between stream water and nearby soils or substrates also may be an important factor (Johnson and Jones, 2000)".

This resubmitted logging plan continues to ignore the cumulative watershed impacts from past logging and addresses none of the impacts Mr. Lewis outlined in his letter. This has been SPI's ongoing practice which Cal Fire has approved for years, as demonstrated in the past plans and our comments (see: SPI logging plans, BCA comments, and Cal Fire's Official Responses to plans: 2-06-173 Lookout, 2-08-052 Bailey's, 2-08-097 Long Ridge, 2-09-027 Plateau Flat, 2-10-003 Dry Gulch, 2-10-034 Grace, 2-10-067 Blue Ridge, 2-12-026 Reynolds Flat, 2-12-031 Hendrickson-Defiance, 2-18-055 Graceland, 2-19-00180 Rio Gatito).

4. No Factual Evidence Provided for Stream Channel Conditions

Plan pages 210-212 Section C "Current Stream Channel Conditions"

Here the plan answers questions regarding the "beneficial uses of water" by stating there are no impacts without offering any factual evidence. The plan conspicuously stays silent regarding cumulative impacts to the downstream waters. There is no mention of Battle Creek specific documents such as Kier 2003, Kier 2009, Myers 2012, Henkle 2016, Pacific Watershed Associates 2017/2018, Lewis 2019, Battle Creek Watershed Conservancy 2019, which all detail impacts throughout the watershed.

The plan offers a table (page 211) rating "Stream Inventory Segments" but as we have stressed in past comments, there is no factual detail of where the survey was performed, who performed the survey, what their training is, what stream length was surveyed, or what measurements were taken that the ratings were based on. Without such supporting information, the ratings given to the stream segments are meaningless subjective opinion.

The stream segments are listed as North and South Fork Digger Creek. No description is given as to where they lie in relation to the level of disturbance; no map is given. The potential logging units 26 and 66 the segments are listed as near made it possible for us to use the unit maps in the plan to create a map of where the stream segments were that were listed as having "none" or "slight" effects and "good" ratings. (Plan maps for Units 26 and 66, listed with the table, are on page 301 and 318 of the plan.) As may be seen on the maps, Figures 21-22, the stream segments for the survey were mostly, or completely, above any of the logging disturbance, just downstream of the edge of Lassen National Forest, which has suffered very little disturbance. That means the segments are likely to be the cleanest, least-impacted segments that could be found and are not representative of effects occurring in downstream reaches.

The use of two stream segments from the highest upstream portion of SPI's ownership in the watershed, coupled with them being on the edge of Lassen National Forest's

undisturbed land, is not even vaguely representative of what is occurring in downstream stream reaches. It is insufficient and misleading information. It fails to provide the honest and adequate evidence needed to prove there are no significant impacts occurring already or with the addition of this plan.

The use of the cleanest upstream sites, and the omission of any downstream sites, does not uphold CEQA's rules regarding cumulative impacts analysis or prevention. The only usefulness of the highest upstream and cleanest sites is to determine a baseline that the lower, more impacted streams could be measured against to fully understand what significant impacts are occurring. Unfortunately though, the Tables on page 211 of the plan are not even really serviceable for that purpose because they offer only subjective one word rating opinions from an undisclosed person(s), instead of numerical measurements by a person known to be trained in hydrology.

- The stream ratings in this plan are the subjective, ocular opinions of a person(s) with unknown training, observed in the least damaged, upstream portion of the land. This person is in the employ of the company with vested economic interests in maintaining the fallacy that their practices have no adverse impacts. This is a wholly inadequate assessment of what downstream impacts are occurring due to the long-term practices that have been approved by Cal Fire. These practices are not providing the environmental protections encoded in the laws.

Figure 21. A closer view of where the stream segments listed on page 211 of the plan are, in relation to past disturbance. The segments are marked with yellow diamonds. The smaller brown holes are ~20 acre units logged by past logging plans. The large brown area on the left is part of the area of the 2012 Ponderosa Fire. The white dotted line is Digger Creek, which is the border between Shasta and Tehama counties. Streamflow is from east (right) to west (left).

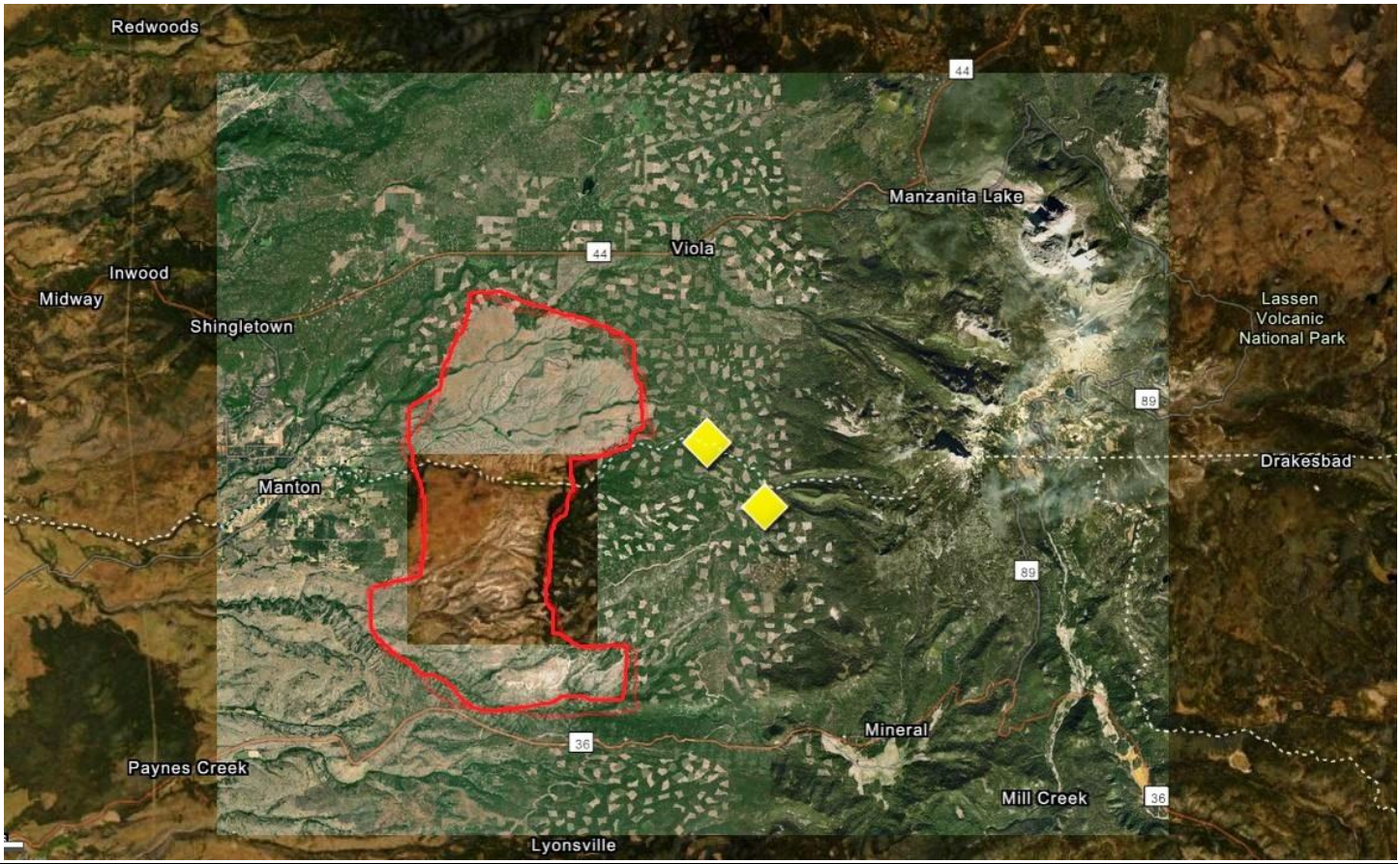


Figure 22. A more distant view of the Digger Creek surveyed stream segments (marked with yellow diamonds). The small brown holes are ~20 acre logged units from past plans, the red outline approximates where the 2012 Ponderosa fire burned and was logged. The border of Lassen National Forest is where the logged units stop, to the right of center in the map.

5. Logging-Road Density Harms the Habitat and Increases Sediment in the Watershed

Page 228 and 251 of the plan address road density.

The previous submittal of this plan, the 2017 Artemis THP, stated the density of roads was 1.95 miles per square mile. When GIS specialist Curt Bradley mapped the road density it was actually an average of ~7 miles per square mile with some sections containing 8, 9 or 11 miles of roads per square mile (Bradley 2018, Figure 23). Page 228 of this plan states that the road density is 1.93 km/per sq. km. It isn't. Page 251 of the plan rates the road density of the plan area as "moderate". There is no science which supports such high road density as "moderate" (e.g. Trombulak 2000, Kier 2009).

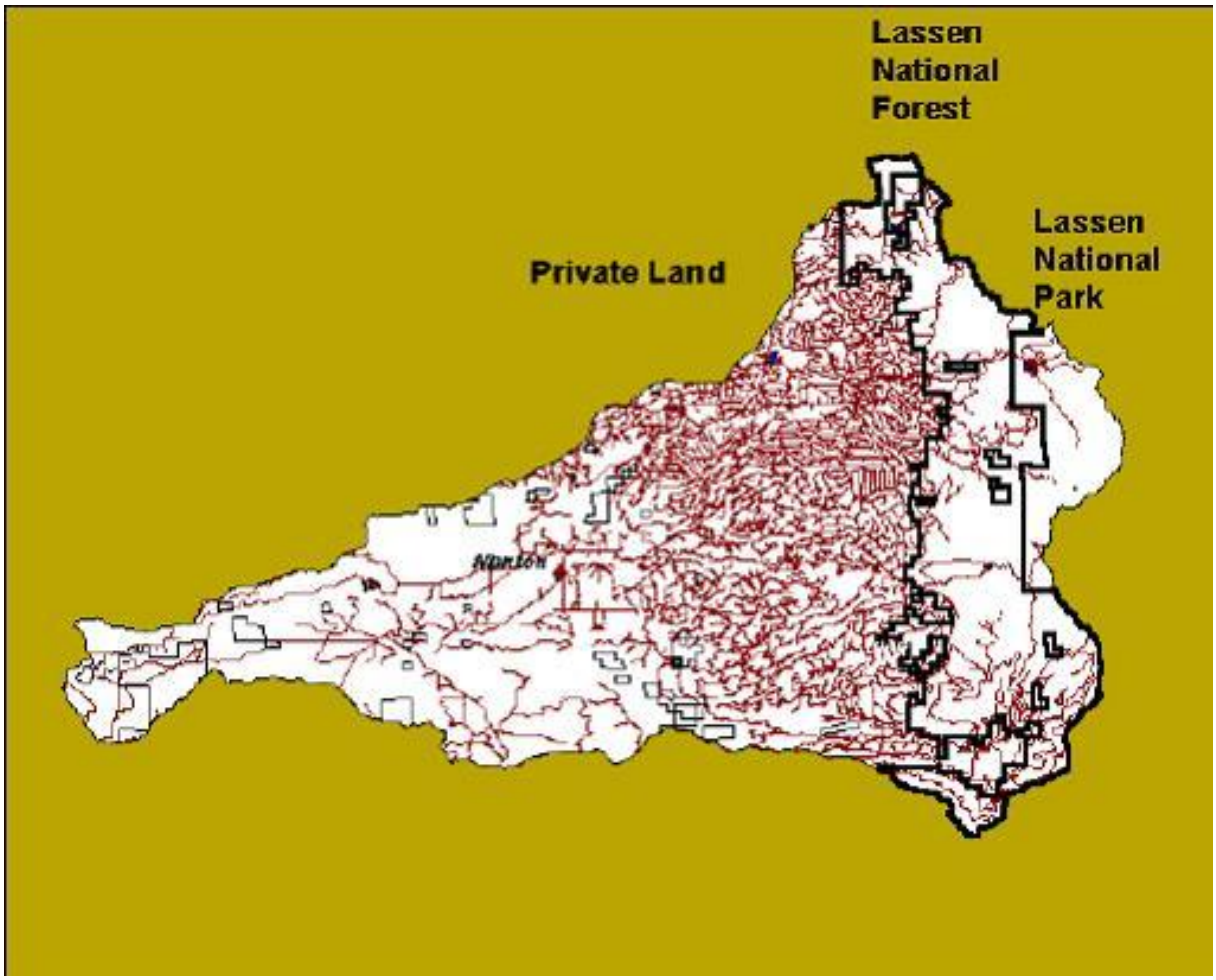


Figure 23. Road density. Red lines are roads, the majority in the industrial timberland, plotted in Kier 2003.

Road density and the heavy equipment use of roads during logging are a significant source of sediment in waterways (Lewis et al. 2019 e.g. "the effects of roads and harvesting are not only statistically confounded, but interact in ways that are not physically separable: much of the road erosion is induced by harvesting activities"). Road density also has significant impacts on terrestrial and aquatic lifeforms (SNEP 1996, Trombulak 2000). There is no description of how the number of km/miles per square km/mile in this plan was arrived at, or why this plan is using square kilometers for maps with sections that are in delineated in square miles. GIS Specialist Curt Bradley calculated the number of miles by section in the plan using the plan's maps. A logging plan is supposed to serve the same function as an EIR. With such blatant disregard for accuracy, the rules and laws are not being upheld. The requirement that the THP contain sufficient information is not being met.

Trombulak et al. (2000) was published in "Conservation Biology" and reviews 179 papers published regarding road density. The authors detail "seven general ways roads of all kinds affect terrestrial and aquatic ecosystems" and write "Numerous studies have demonstrated declines in stream health associated with roads...

...Roads are often built into areas to promote logging, agriculture, mining, and development of homes or industrial or commercial projects. Such changes in land cover and land and water use result in major and persistent effects on the native flora and fauna of terrestrial... and freshwater ecosystems..."

SNEP Vol. I, Chapter 8 (1996) details road-related problems, while also addressing the decline of aquatic species, cumulative factors, the importance of the channel network and watershed upstream to aquatic health, and the lack of range-wide monitoring. These are all problems we have written of in past comments, which SPI and Cal Fire practices have ignored, and continue to ignore in this plan.

"The decline of native fishes and amphibians and changes in aquatic invertebrate assemblages in the Sierra Nevada largely reflect the deterioration of aquatic and riparian habitats. They have been altered by development of water and other resources. Of sixty-seven types of aquatic habitat categorized in the Sierra Nevada, almost two-thirds (64%) are declining in quality and abundance, and many are at risk of disappearing altogether. Factors contributing to this deterioration are many and cumulative. The health of any part of an aquatic system depends on all the influences of the channel network and watershed upstream of that point. In spite of better landuse practices, excessive sedimentation continues to be observed and documented in site-specific analyses, even though systematic, rangewide monitoring is lacking. Implementation of newer practices designed to prevent sedimentation (practices officially designated as best management practices under the federal Clean Water Act) may be too recent for positive results to be observed in some systems. But the close association between roads and sedimentation and the pervasive nature of roads within the streamside corridor mean that chronic problems may be persistent and difficult to overcome" (SNEP V I, Chap 8).

D. Plan is Missing Quantitative Data of Cumulative Impacts on Wildlife Habitat

According to the Timber Harvest Review Team's pre-harvest inspection report, CDFW (CA Dept. of Fish & Wildlife) did not attend the inspection or make any comments regarding this plan. In other words, the regulatory agency responsible for wildlife and other biological resources has provided no review of this plan. SPI has provided no quantitative data regarding cumulative impacts on wildlife populations in their chosen small planning watershed assessment area, or downstream of that area. Consequently, there is no valid, factual evidence in this plan. Since there is no site-specific data for this plan, we can only refer to studies outside of the area which address habitat fragmentation, climate change impacts, and population declines, such as Barnosky et al. 2012, Bottaro 2019, Bull et al. 1997, Bury 2006, CA Senate Office of Research 2002, California Trout 2017, Carter 2005, Ceballos et al. 2020, Endangered Species Coalition Report 2011, Franklin 1993, Gil-Tena 2007, Graber 1996, Haddad et al. 2015, Hagar 2007, Hicks 1991, Intergovernmental Panel on Climate Change 2019 (a) and 2019 (b), IPBES 2019, Jules 1998, Karr et al. 2004, Karraker 2006, Katz 2012, Klein 2008, Leemans 2004, Magurran 2010, Marchetti 2010, Moriarty 2011, Noss 1990, Payer 1999, Pimentel 1992(a), Reeves et al. 1993, Rosenberg et al. 2019, Sauter 2010, Schultz 2010, Simon 1980, Soga 2018, Thompson 2011, Torras 2008, Trombulak 2000, Welsh 2011, Wilson 1989.

- If Cal Fire approves this plan as having no significant adverse cumulative impacts, as is their standard practice, the approval will be based on inadequate review by CDFW

and a lack of substantive facts regarding both the planning watershed impacts, and the impacts downstream of the project.

Plan pages 144-147 presents many figures ostensibly showing that wildlife species are able to utilize SPI's land. However, the data was collected from 1990 to 2007, before their lands had been clearcut as extensively as now, and before the extremes of climate change that have become increasingly worse since 1990 to 2007. The plan speaks of the plots that were used, but there is not one description of where the sites were or what place on SPI's land the numbers came from, what condition the forest was in (cut or uncut), not even the county(s) the plots were in is mentioned.SPI owns 1.76 million acres in California over a number of counties. The total lack of any kind of specificity to the information makes it completely worthless for determining significant adverse impacts to wildlife populations and habitat. It is not site-specific to the area of this plan and provides no evidence regarding this plan. This ongoing non-information is rife throughout SPI's past logging plans as well as this one and is being used to camouflage the adverse cumulative impacts increasing over time due to their practices.

The unspecified place, time, and habitat SPI tables copied and pasted into this plan list martens as one of the species the counts are supposed to cover. Moriarty (2014) studied "Habitat Use and Movement Behavior of Pacific Marten (Martes caurina) in Response to Forest Management Practices in Lassen National Forest, California." This study was east/upstream of SPI's land in the Battle Creek watershed, on the significantly less disturbed national forest land (e.g. Figure 22). Martens are considered an indicator species due to their sensitivity to habitat loss and fragmentation from loss of forest cover. This study found that martens avoid simplified stands to some extent and avoid openings as much as possible. Other studies from different locations also drew these conclusions and found large population decreases associated with higher levels of logging (Moriarty 2011). Martens hunt and forage within forests and along their edges. They avoid open areas; most literature specifically mentions clearcuts as places that marten avoid, e.g. “Martens avoid large openings such as clear-cuttings, and if an area is cut over or severely burned, it is of little value to them for about 15 years” (Clark et al. 1987; see also Moriarty et al. 2011; Bull and Heater, 2001; Thompson and Colgan, 1999; Payer and Harrison, 1999, Fredrickson 1990.) This plan does not address, or even acknowledge, the known significant adverse effects of habitat loss and fragmentation on wildlife species. This plan continues SPI's practice of cutting and pasting generic information regarding species such as the marten in it, as if such repetition of vague verbiage means something to a robust and defensible cumulative impacts assessment. It doesn't.

Because there is no evidence provided in this logging plan or by CDFW regarding actual existing species health in the planning watershed, we must fall back on scientific discovery from a broader area. The 2019 paper "Decline of the North American Avifauna" (Rosenberg et al.) documents a huge loss of birds, including common ones, throughout the U.S. and Canada. The paper's one sentence summary is "Cumulative loss of nearly three billion birds since 1970, across most North American biomes, signals a pervasive and ongoing avifaunal crisis." While we expect Cal Fire will dismiss this, as is their practice with our submissions from outside the planning watershed, we do not believe that the Battle Creek area, or the planning

watershed in this plan, is immune to the high loss this study finds. For one example, when this writer moved to the Battle Creek watershed in 1989 she often saw red-winged blackbirds (*agelaius phoeniceus*) within and below the timberland before it was sold to SPI. Over the years, as the immense landscape change occurred incrementally in the 75,000+ acre block of logged land, she saw fewer and fewer. Now, it's rare to see even one individual. No one is even looking for these losses in the less iconic species here. This plan is certainly not even attempting to provide any factual evidence about species population decline.

We submitted additional evidence regarding bird issues throughout the logged land within Battle Creek with our comments on the earlier submission of this plan (Artemis) and the Rio Gatito plan. The evidence and questions were ignored.

Page 147 Habitat Distribution Change over time graph

This is another copied and pasted generalized graph that has been in SPI plans for years. It is a graph based on SPI's Option A ("Sierra Pacific Option A Demonstration of Maximum Sustained Yield for each Forest district in California, 1999", listed on page 173 of the plan.) SPI's Option A was filed in 1999, is a brief 32 pages, and is broadly about all their land and has never been updated to acknowledge changing or diverse conditions. This document is based on SPI's projections for the next 100 years (from 1999) yet has not one word about climate change or the associated higher fire risk and droughts or species loss in it. It is pure speculation based on information collected in the 20th century which scientists say was much wetter than most of California's history e.g.: Carle, 2004 "The twentieth century was not "normal" when compared to this longer record; it was, in fact, California's third- or fourth-wettest century of the past 4,000 years...Since statehood, Californians have been living in the best of climate times. And we've taken advantage of these best of times by building the most colossal urban and agricultural infrastructure in the entire world, all dependent on huge amounts of water, and all based on the assumption that runoff from the Sierra Nevada will continue as it has during the past 150 years." and Ingram 2013: "Engineered water management was an aid to building a large, modern society in the West during what is now understood to have been a century of benign, moderately wet times...Now, in the twenty-first century, there is evidence that this brief time of climate stability is slipping away, and we are entering a period of drier and more erratic conditions."

The graph in this plan provides no factual evidence that SPI's land will ever become large tree habitat and is based on past history rather than the increasingly alarming projections of present and future climate instability. Even with its rosy speculative projections for 60 years from 1999 when the graph begins to show large tree habitat increasing, the graph shows the majority of the habitat being "Small Tree" for the ~60 years between 1999 and 2060, and that is based on pre-climate change data. Figure 24 shows how hot and dry California has been for the 20+ years since SPI's Option A was submitted and is clear evidence that SPI's projections are only meaningless speculations rather than factual representations of what may occur in future decades. These speculations do not provide solid evidence that no adverse impacts have occurred or will continue to occur.

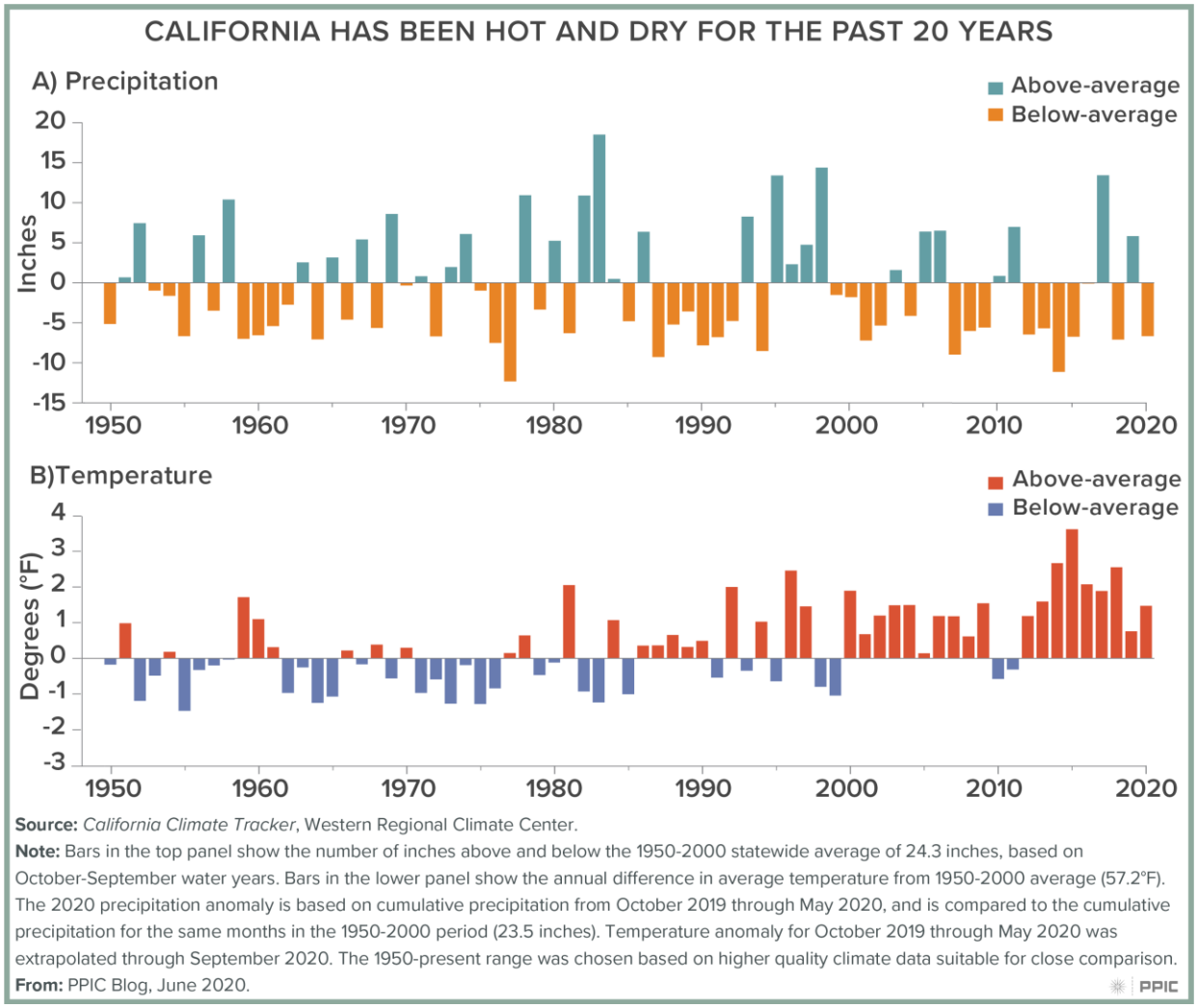


Figure 24. Hotter, drier conditions for the past 20 years, which affect wildlife, plants, fire probability and behavior. This plan ignores climate change, as have past plans and approvals.

E. Wildfire Risk and Hazard are Not Mitigated in Powerhouse Plan

One of the citations which has been copied and pasted for years into SPI's THPs, and is also included in this plan, is the 1996 Weatherspoon paper entitled "Fire-Silviculture Relationships in Sierra Forests". Our review discovered that there is nothing in this paper that supports the removal of such a large area of canopy cover in the brief timeframe it has occurred in. In fact, the author states "Although even-aged [clearcutting] cutting methods are discussed briefly, this chapter emphasizes methods other than even-aged ones because (1) they more closely mimic the natural disturbance regimes prevailing in most Sierra Nevada forests, and (2) any landscape level needs for large, even-aged stands are likely to be met by severe wildfires and subsequent plantation establishment for the foreseeable future." This is the antithesis of SPI's past and present plans which have resulted in the large, contiguous block of the majority of 75,000 acres being turned into ponderosa pine tree plantations.

Regarding fire, Weatherspoon (1996) writes (over 2 decades ago, it must be pointed out, demonstrating this problem was already known) "It is noteworthy that the extensive changes in Sierran forests brought about largely by fire suppression and other human activities over the past 150 years have included a virtual reversal of fire types... Fire type 2 [low intensity, patchy high intensity], historically the dominant fire type in Sierra Nevada forests, has now been virtually eliminated. Conversely, fire types 4 and 5 [high intensity with patchy low, and uniform high intensity respectively], relatively rare historically, now account for a large proportion of wildfire acreage in the Sierra Nevada." Later he writes "even-aged forest stands in the Sierra Nevada were probably relatively uncommon in the pre-settlement era."

Another important finding this paper contains is: "A related but separate concern has to do with changes in microclimate brought about by stand opening. Thinning or otherwise opening a stand allows more solar radiation and wind to reach the forest floor. The net effect, at least during periods of significant fire danger, is usually reduced fuel moisture and increased flammability...The greater the stand opening, the more pronounced the change in microclimate is likely to be." This is a significant cumulative effect which has been ignored, and ties in to the 2012 Ponderosa fire which burned primarily (60+%) on SPI's cut and adjacent acres.

SPI has listed this paper in logging plan references for every plan that we have seen. This older paper does not support SPI's ongoing logging practices at all, regarding either ecosystem services or protection from higher severity fire. The paper does demonstrate SPI's ongoing practices, and Cal Fire's approval of them, are likely contributing to higher fire severity; it also shows that information was known in 1996, long before the landscape level changes were begun in the area of this plan. Fire severity is an additional significant cumulative impact which has been ignored in past plans as well as the current plan. (Figures 25 to 35.)

Fire danger, fire severity, and fire's subsequent water quality effects are significant environmental impacts which are not being acknowledged or mitigated within this THP, or the multitude of THPs in the Battle Creek watershed. Figures 25 to 35 are of other logged areas in the Upper Digger Creek (and surrounding) planning watershed, to demonstrate how slow the recovery process is. These photos are representative of the standard post-logging conditions on SPI land. We have submitted most of these photos before because of our concerns regarding cumulative impacts which are being ignored, but Cal Fire's Official Responses consistently ignore the real land conditions. This THP would be an addition to the significant impacts which already exist.

For additional references and comment, see ecologist Chad Hanson's letter regarding this plan (Hanson 2021).

Figure 25. Part of the 2012 Ponderosa fire area in February 2021, representative of the slowness of recovery, useful habitat loss and decreased diversity of plant species and diverse structure. This photo was taken west of Digger Butte, looking towards the east. Mt. Lassen is in the background. The Powerhouse plan is to the east of this area. Unit 19 from 2006 Lookout plan is marked in red.

Figure 26. Digger Butte area in 2011 pre-fire, when Unit 26 of the Lookout plan was cut. This photo is looking from north to south; the 2021 photo area in Figure 25 is outside the right side of this photo and was forested the same. Red circle marks the former fire lookout tower here and in next Figure.

Figure 27. Digger Butte in 2021. For comparison to Figure 26 the red circle marks where the fire lookout tower was. This area is downstream of the Powerhouse plan and demonstrates how little recovery has occurred.

Figure 28. A closer view of the 2012 fire area in 2021. Note invasive, non-native plants growing here, at higher elevations where they did not occur pre-logging. Mullein (*verbascum thapsus)* **and yellow star-thistle** *(centaurea solstitialis*) **are marked. The appearance of invasive plant species has commonly occurred post-logging throughout the industrial timberland in Battle Creek watershed. Invasive species crowd out the native species, causing more diversity loss.**

Figure 29. 2003 Digger THP, Unit 147, photographed in May, 2008. This plan will cut more nearby.

Figure 30. 2003 Digger THP, Unit 147, photographed 10 years later, April, 2018. Note the pruned, dead limbs left at the base of the single-species plantation trees also. This fire fuel was still present as of August 15th, 2018, at the height of fire season. This is common practice. Before the 2012 Ponderosa Fire, there were many young trees in the future fire area with dead, pruned branches around their bases.

Figure 31. Forward Road dead prunings, 2012 Ponderosa fire area in 2020. Yellow star-thistle in foreground where it didn't used to grow.

Figure 32. Roadside edge of 2003 Digger THP unit photographed in April, 2018. A proposed unit of the earlier 2017 Artemis THP, and now this Powerhouse plan, is adjacent to this in the background.

Figure 33. Another roadside edge of a 2003 Digger THP unit in April, 2018. A proposed unit of the earlier 2017 Artemis THP, and now the current Powerhouse plan, is adjacent to this in the background.

Figure 34. The opposite side of the road, across from the 2003 Digger THP units, and proposed 2017/2020 THP units, photographed in April, 2018. This WLPZ area was bulldozed during the 2012 fire. There is no regeneration or soil stabilization apparent. Pre-fire, there was a seep alongside the road here where we observed a western pond turtle residing. The habitat was destroyed by the bulldozers in 2012 and showed no recovery after 6 years. Post-fire emergency salvage logging is not subject to CEQA mandates, and is ignored in the THP cumulative impacts analysis.

Figure 35. A photo of a 15 year old plantation in SPI's industrial timberland on Ponderosa Way, in the Big Chico Creek area of the 2018 Camp Fire. This photo is from outside of the Battle Creek area, but is representative of SPI's plantations and practices, and is also relevant to any discussion regarding increased fire danger and fire severity.

F. Misleading Documents Included in Plan

As we have written, this plan ignores many of the Battle Creek-specific publications that detail significant cumulative effects. The plan does include a few Battle Creek related documents. Our review finds that the plan omits any reference to details in the documents it cites that speak of significant adverse cumulative effects. Examples of the misleading nature of the documents the plan cites follow.

Example: MSG report in plan page 210 Section B The Watershed Assessment Area paragraphs refer to a Board Of Forestry's Monitoring Study Group (MSG) Report from 2000. The plan writes that this report is still "valid" despite the more than 20 years which have passed since the data was collected and the massive landscape-level changes which have occurred in that time. It's not. (Figures 3 to 7 and Battle Creek Alliance 2015, "Clearcut Nation".)

The MSG report itself states on page 8 that the evaluations of logging plans occurred between 1996 and 1998, and that only 8 of the 150 plans evaluated were in Shasta County.

There are no plans listed as being in Tehama County. There is no map provided of where the plans were. The timeframe is before SPI began logging the Battle Creek watershed extensively. There is no mention of main watersheds or planning watersheds. There is no pertinent detail in that report that is related to a new logging plan in 2020.

Throughout this plan what is missing is a discussion of the environmental impacts of any other logging plans on the watershed or aquatic species; this old MSG report does nothing to provide that discussion. Between 1997 and 2016, THPs covering more than 61,000 acres have been filed and approved, amounting to nearly 30% of the land within the entire Battle Creek watershed and at least 80% of the land in the industrial timberland block. (See CA Dept. of Forestry FPGIS file, 2018 and Figures 1 and 2.) Yet according to this plan, as well as the past plans, all of this logging and the associated roads used for it have had no impact on the environment and are not relevant to evaluating cumulative impacts that are occurring downstream. The plan includes no evidence to support this conclusion, nor does the MSG report.

Example: SPI 2020 report. Plan page 212 refers to the 2020 SPI-produced document "Digger Creek Tributaries Water Quality and Road Erosion Report" and adds the report on pages 570-583 of the plan. The majority of this report is the same text and graphs as the 2018 SPI-produced "Bioassessment and Water Quality for South and North Forks Digger Creek" referred to on pages 215 and 426-438 of this plan. (It was submitted for the earlier Artemis version of this plan; see our comments in the following example.) The same deficiencies of the 2018 report are repeated in the 2020 document-- i.e. the lack of any map or coordinates to provide evidence as to where the information was collected in relation to the land and the effects on it. The data was likely from the same sites shown in Figures 21 and 22 which renders it meaningless to detect downstream cumulative impacts.

These 2 SPI reports are the only documents in the plan that are actually about the small planning watershed and assessment area that SPI has chosen to confine its cumulative impacts assessment to. The placement of the instream monitoring equipment far upstream of the most impacted areas fails to capture any downstream impacts and:

- negates the use of the data as evidence to detect cumulative impacts
- is purposely misleading
- does not meet the analytical standards set by CEQA, which are intended to afford the fullest possible protection to the environment

Example: SPI 2018 report. Pages 215 and 426-438 reference the SPI-produced "Bioassessment and Water Quality for South and North Forks Digger Creek". This was submitted for the earlier Artemis version of this plan. The report had the same deficiencies in 2018 as it does now; we wrote of the deficiencies in our comments on the Artemis and Rio Gatito plans.

Please note, none of the maps for the area ever call the more northern fork of Digger Creek "North Fork". It's always labeled as "Digger Creek", while the south fork is labeled as "South Fork Digger Creek". We will use that nomenclature here.

Both forks begin to the east of the industrial timberland block (upstream), in Lassen National Forest land, and flow east to west. Digger Creek is the larger branch. The confluence of both branches is approximately ¼ mile east of the Tehama county end of Forward Road in Manton. As may be seen on the following map (Figure 36), one of our Citizen's Water Monitoring sites, marked with a green diamond, is ¼ mile west (downstream) of the confluence. BCA has had two monitoring sites on Digger Creek since 2009. A map of all of our sites is included in Lewis et al. 2019 and in Figure 8.

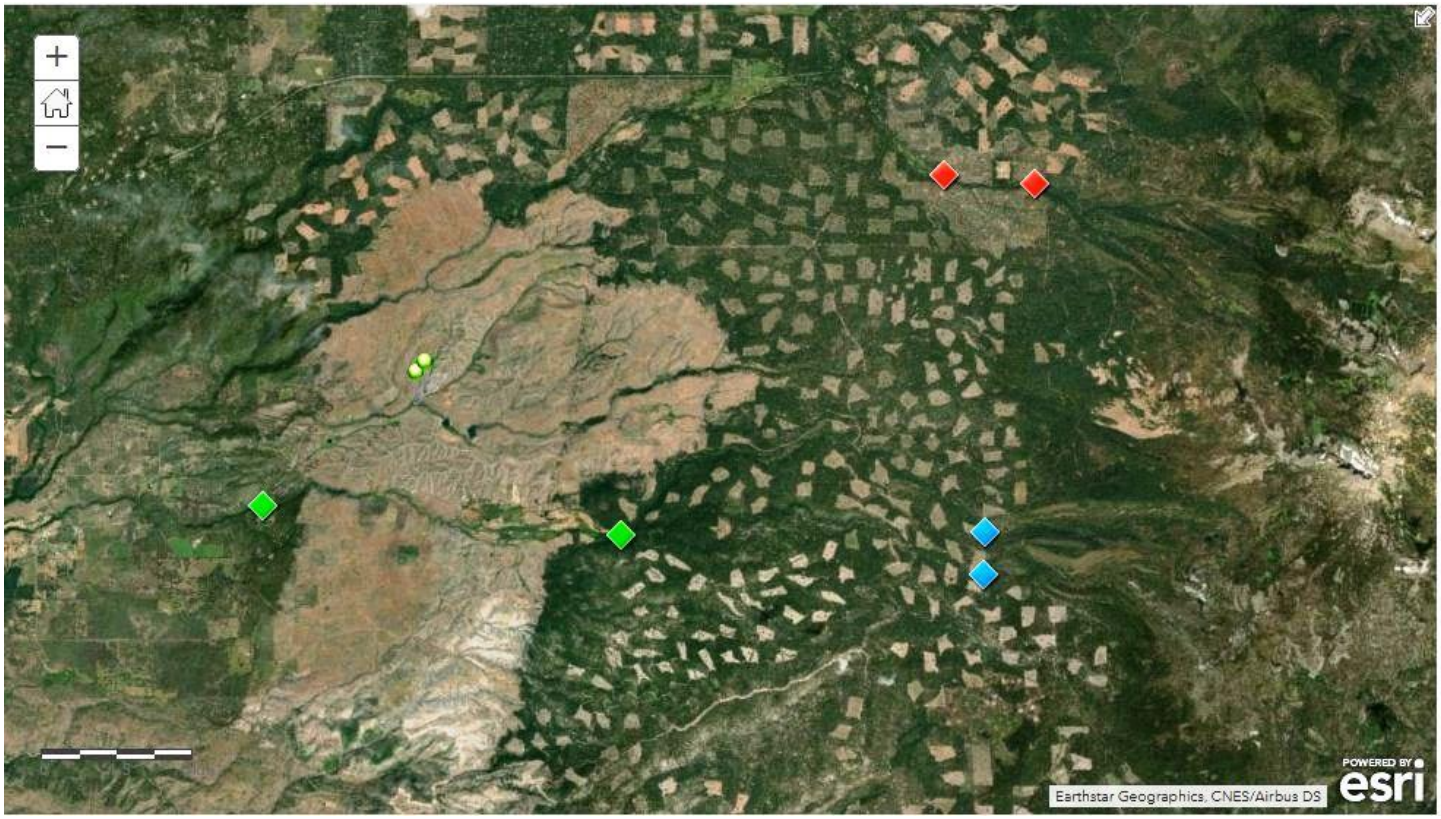


Figure 36. The industrial timberland area of Battle Creek watershed. The regularly spaced brown holes are clearcuts. The large brown area is from the Ponderosa Fire of 2012 and the subsequent salvage logging of it. The uncut area on the right hand side is Lassen National Forest where the Battle Creek tributaries, Digger, Bailey, and Panther Creeks, originate. The green diamond shapes mark 2 of our water monitoring sites on Digger Creek, the right hand being the higher (upstream) site, DC, and the lower, DCH. The blue diamonds mark the Digger and South Fork Digger Creek locations at the boundary near SPI and Lassen Forest land. The red diamonds mark SPI's data stations on Bailey Creek as detailed in the SPI James and MacDonald 2012 report regarding Bailey Creek; those stations are also placed upstream of most of the land disturbance.

The SPI Bioassessment referenced in this plan has no map or description of where their data is being collected from. If the data is being collected from near the upstream Lassen Forest boundary as their Bailey Creek data is, it has no relevance to what effects are occurring in the cutover industrial timberland downstream. All of the numerical and graph

figures and conclusions in SPI's document are worthless for a reasonable judgment of cumulative impacts without the most basic foundation of knowing where the data was collected from in relation to the landscape. This document provides no evidence of having been peer-reviewed by a professional hydrologist. Dr. Peter Green from U.C. Davis reviewed the SPI document and submitted a comment to the Timber Harvest Review Team regarding it for the 2017 submittal of this plan: e.g. "This report does not identify, by either detailed map or coordinates, where the water quality sampling was conducted. Without this information, the report has no relevance to identifying impacts that may be present from past harvests." (Green 2018).

Our review of the SPI Bioassessment provides evidence to support our demand that the Timber Harvest Review Team does not lend credence to the deceptively misleading SPI document regarding Digger Creek when analyzing the impacts of this plan.

Along with submitting the information about the misleading SPI Bioassessment before, we have submitted professional reviews many times of other SPI-produced documents that purportedly analyze their own logging impacts. SPI cites to these documents again in this plan, even though independent professionals have written reports documenting the misleading content of them. We have not ever seen Cal Fire provide a response regarding SPI's deceptively misleading documents in its Official Responses, so we can only presume those documents are being accepted by Cal Fire without the dismissive attitude displayed to documents we have submitted. (See BCA past plan comments and Cal Fire Official Responses, as well as Britting 2008, Miller 2008, Myers 2012, Myers 2013, Lewis 2014, Lewis 2016, CV Water Board 2018, BCA 2020 erroneous paragraph.)

A technical report was prepared for the Central Valley Regional Water Quality Control Board by Henkle et al. (2016). Cal Fire has used short quotes from this document in past Official Responses (e.g. Graceland plan 2-18-055) to dismiss or disparage BCA's comments and data collection work. Cal Fire ignored the actual data evidence the report provided though. All of BCA's and Henkle's sites are downstream of this proposed Powerhouse plan.

Henkle collected some grab samples to measure turbidity during Water Year 2014-2015. BCA uses the same methodology, although we have collected samples since 2009 and have collected over 14,000 samples in the ensuing years. (See BCA QAPP 2019 and CEDEN.) Henkle had two sites that were the same or similar to BCA's; one was on south fork Battle Creek at the same site BCA uses and one was on Digger Creek; BCA's upper and lower Digger Creek sites are shown on a map of BCA's sites in Lewis et al. 2019. Upon examination of Henkle's records BCA found that both he and BCA had collected samples on December 4th, 2014 at nearly the same times. The Henkle and BCA results are consistent with sediment effects collecting and increasing as they travel downstream from the highest upstream site Digger Creek having the lowest NTUs, and lowest downstream site south fork Battle Creek showing the highest NTUs. The results show how closely all the results align, which we hope will deter Cal Fire's practice of dismissing our work in the Official Responses they write.

On pages 212-214 of this plan, SPI uses 25 NTUs as a reference for severe effects, citing to "Newcombe 2003". There is no hydrologist listed in SPI's personnel references on page 171 of this plan. SPI submits only misleading information gathered from high upstream in the watershed. That makes this plan another in a long line of fact-free black holes regarding significant effects that are occurring in this watershed.

There has been no numerical value applied by Cal Fire in past practices and approvals to define what they believe is an exceedance, but then there is no evidence in their Official Responses that they have ever even considered if there **are** any exceedances. As far as has been written in Cal Fire's Official Responses, they have never sought or reported any definition or results. (See Cal Fire 2019 regarding cumulative impacts, e.g.: In answer to our question "What you would consider a cumulative impact?" Cal Fire responded "as each plan is a unique project, and there are few thresholds that have been established for resources that may be impacted, I am not going to speculate as to when a significant impact may or may not occur."

Example: Lassen National Forest report. Pg 215 and 374-389 of the plan adds a document entitled "Aquatic Condition Report for the Upper Battle Creek Watershed". This report was written 20 years ago by Lassen National Forest (LNF) and is only about creeks upstream of SPI lands on LNF land. The LNF lands are primarily undisturbed. The plan says this report is "relevant" to this project. It isn't. The THP deceptively infers that this report applies to SPI lands. It doesn't.

The surveys were done upstream of SPI's land, 20 years ago. This fails to account for 20 years of significant impacts from logging, fire, drought and climate change.

The surveys were performed on undisturbed land, upstream of this plan, which is completely different from SPI land. (See Figures 21, 22.) Even if this report was produced a year ago, it would still have no relevance to SPI land. The LNF surveys were mostly around Nanny and Martin creeks far to the southeast of SPI's chosen small "planning watershed" (see Figure 52 for planning watershed boundaries). SPI's and Cal Fire's decades long practice of choosing to use small planning watersheds only serves to minimize significant effects. This practice does not uphold the rules or laws meant to prevent significant effects. As is the case here, and throughout the many past logging plans in the Battle Creek watershed, SPI quotes information from outside the planning watershed to try to support their practices, but does not quote any of the many documents that do show their kind of practices have significant effects. (See BCA references.)

Example: USFWS press release. Pages 215, and 405-407 add a March 2018 USFWS press release regarding Chinook salmon. It is copied and pasted from the earlier 2018 recirculated version of this plan, Artemis. First, a press release is not a high quality document to provide factual evidence regarding cumulative effects. Secondly, the THP states that the press release means "This is a very strong indication from state and federal agency biologists that chances for re-establishment of this species here are good due to the trending improvement of habitat conditions in the greater Battle Creek Watershed since the Ponderosa Fire and drought years 2012

through 2016". This statement avoids and misrepresents much of what the press release says though. E.g.:

--Nearly the entire in-river juvenile population was lost in 2014 and 2015 due to extreme drought.

--"Over the course of several decades, this reduced the number of winter-run Chinook salmon from four large populations numbering in the in the hundreds of thousands, to a single, imperiled population that is mostly comprised of hatchery fish."

--"Today, Sacramento River winter-run Chinook salmon are listed as an endangered species under both federal and state law. NOAA Fisheries also considers winter-run Chinook salmon among eight marine species most at risk of extinction…"

This press release adds no factual evidence to inform the analysis of SPI's cumulative effects. It doesn't address the SPI-chosen area for the cumulative impacts assessment included within the plan at all. SPI, and the plan, limits the area for cumulative impacts assessments to a planning watershed and a small percentage of their industrial timberland. This reductive system has been used for the multitude of logging plans in the Battle Creek watershed to avoid a factual watershed-scale cumulative impacts analysis. Here, SPI wants to suddenly include information from outside their chosen assessment area that they seem to believe supports them. Yet, nothing is included from the larger watershed area about their negative impacts. Impartial decision-making based on facts cannot allow SPI to have it both ways.

Although this plan includes the brief press release noted above, it does not include the 2019 USFWS report (Bottaro and Earley 2019) regarding fish monitoring that was conducted in Battle Creek in 2017.

Example: 2011Task Force report, pages 219-220 and 439-508

One of the few documents from Battle Creek (the larger logged area, not the planning watershed for this plan) cited by SPI in this plan again is the 2011 report from Cal Fire et al. (Interagency Task Force) "A Rapid Assessment of Sediment Delivery from Clearcut Timber Harvest Activities in the Battle Creek Watershed, Shasta and Tehama Counties, California".

One of the Task Force Report's recommendations was:

Recommendation 10:
Engage in a follow-up study to relate the results of the assessment to water column data (i.e., turbidity) and in-channel physical habitat characteristics (e.g., particle size, pool fining, etc). A follow-up study should also address the potential for timber harvest associated peak-flow induced increases to suspended sediment, turbidity, bedload transport, and/or channel alterations. (pg 53)
The Task Force was unable to evaluate the potential for indirect water quality impacts due to clearcut harvesting (for example, potential channel modifications

and increases in suspended sediment and turbidity associated with logging-induced increases in peak flows), but the issue of timber-harvest-induced changes in hydrology in ground-water dominated, young volcanic terranes such at Battle Creek watershed remains an open question. (pg 54)

In 2016, we received documents from a Public Records Act (PRA) request. These documents included emails written in 2013, including one from a member of the Task Force (Short 2013). On May 28th, 2013, staff member Bill Short wrote:
"As we have discussed previously, a significant hole in the 2011 BC task force assessment (which we acknowledged) was the timing of the field work (because the assessment was performed late in the season, it was recognized that there was a potential to miss subtle indicators of erosion and sediment delivery from the harvest units that may have been obscured over the time period between the last rainfall and the assessment). I believe that it is important for us to follow-up on this aspect of the assessment so that we can respond if any questions are asked in the future."

After receiving these emails, we questioned Assistant Secretary of Forest Resources Management Russ Henly. We asked if any Task Force follow up had been performed since 2013. On May 27th, 2016 he responded: *"No follow-up work was performed by the Task Force."* He also stated: *"Section 6.7 Assessment Limitations in the Battle Creek report acknowledges that the assessment area was not subject to significant stressing storm events for several seasons prior to September 2011,* [when the 5 days of field visits occurred] *when the then-recent harvest activity was assessed."* (Henly 2016.)

Hydrologist Tom Myers wrote a technical memorandum for us on August 4th, 2012 regarding another logging plan in Battle Creek. That plan also used the Task Force report as justification for SPI's practices (Myers 2012). Regarding the Task Force report Dr. Myers wrote:"*The Interagency Task Force [ITF] report, which the THP discusses, does not assess sediment conditions in the streams; it focuses only on conditions on harvest sites and found just one example of a low-magnitude sediment delivery. In contrast, during a brief tour from public roads in the watershed in April 2012, Myers (2012) saw several examples of sediment and turbidity moving along roadside drainages and from at least one harvest access road. This visit occurred during a minor rain event. The ITF visit occurred during September 2011, a time when many signs of erosion and sediment could have been obliterated due to four to six months of dry weather.*

> ** The ITF report should be relied on only sparingly until the work can be repeated during a wetter period so that sediment movement and erosion processes can actually be observed.*

The ITF report also does not assess sediment conditions in the streams. The statement that the ITF 'saw no significant direct water quality impact related to clearcut harvesting in the assessment area' ***is meaningless because the ITF did not assess stream conditions."***(Emphasis added.)

Hydrologist Jack Lewis also addressed the deficiencies of the Task Force report in 2014 (Lewis 2014). "The Interagency Task Force (ITF) report (CALFIRE et al., 2011) on Battle Creek has been cited in recent THPs to suggest that there are no significant direct water quality impacts in Battle Creek related to clearcut harvesting. **Such interpretations are inappropriate as a lack of evidence of impacts using the ITF rapid assessment methodology does not constitute evidence of no impacts.**"

The inclusion of the 2011 Task Force report again in this logging plan does not provide relevant factual evidence to prove that significant impacts are not occurring, and have not occurred since 2011. In fact, it provides evidence that significant effects are not being adequately followed up on. We have commented on the overlooked problems in this report many times before, yet it still keeps being used to support SPI's and Cal Fire's claims there are no significant effects being caused by SPI's large scale of landscape-changing logging. The report cannot be used to support this plan, and should contain full disclosure of the problems associated with it when it is referenced, the most important problem being that no additional search for impacts has ever occurred in the decade that has passed since the Task Force Report was produced.

Example: Page 221 and 535-569 regarding Tussing report "Battle Creek Watershed Stream Condition Monitoring 2012-2017"

Page 221 of plan: SPI takes one figure and paragraph out of the report, avoiding the many details that show downstream impacts, in an attempt to represent the report as demonstrating that there are no adverse impacts occurring.

page 540: Downstream impacts are detailed in the Tussing report: "Within the first two winters post-fire, increased rates of debris flows were initiated primarily in Digger Creek and Lower South Fork Battle Creek (Terraqua 2018). However, the most severe sediment inputs to perennial stream channels are observed in the third winter post-fire (2015 water year) which brought high intensity rainfall and flooding to the Battle Creek watershed. Stream flows from this storm event peaked at 15,300 cfs at the lower Battle Creek stream gauge (USGS station #11376550, online query). South Fork Battle Creek peaked at 7,700 cfs, while North Fork Battle Creek peaked at 3,258 cfs (DWR, BAS and BNF gauges respectively). Note that the South Fork gauge captures approximate half the drainage area as the North Fork gauge (Appendix 1, Figure 1). Observations during and after the flood events in the 2015 water year indicate that fish habitat and water quality are being affected by high sediment loads. There is evidence that anadromous habitats have experienced an increase in sediment deposition and the loss of important pool habitat (USFWS 2015a), public road segments have experienced failures (CVRWQCB 2015), and the Coleman National Fish Hatchery is being affected by high suspended sediment concentrations (USFWS 2015b)."

page 548: Note the report's own disclaimers regarding low sample sizes and lack of monitoring at all in 2015 and 2016: "With the exception of the mainstem, average CSCI scores in 2017 for all major sub-watersheds exceed 0.92 “likely intact”, though inferences at this scale suffer from low samples sizes (Table 4). The mainstem below the confluence of North and South Forks of Battle Creeks is in “likely altered” condition in 2017, represented by a single sample."

[Table 4 shows only 4 samples for Digger Creek. It also shows the Mainstem (downstream) as "likely altered".]

"Note that BMI monitoring was not performed in 2015 or 2016, after the watershed experienced a significant flood event and erosion of native surface roads (e.g. Ponderosa Way, South Fork watershed) in the 2015 water year. Therefore, the potential decrease in watershed average CSCI conditions related to this event are not captured."

page 554: "Trends. The long-term trend in stream bed surface d50 (median) particle size from all available probabilistic sampling sites within the Battle Creek watershed for years 2001 through 2017 illustrate a coarsening of stream beds in 2017 (Figure 14). The dramatic increase in d50 in 2017 is the result of 5 sites dominated by bedrock or boulders exceeding 625mm (Table 7). Two of these sites occur in the South Fork, and one each in the North Fork and Bailey and Digger Creeks (Table 7)."

page 555: Figure 15 plus "The percent embeddedness for cobble sized substrate shows some fairly consistent increase over time for all sub-watersheds."

page 556: Tables 8 and 9 show steadily increasing embeddedness from 2006-2017 in both north fork Battle Creek and Digger Creek; others are all higher percentages of embeddedness in 2017 than in 2006.

page 559: The report presents more disclaimers regarding the results: "Results of the BACI analysis for post fire effects are inconclusive, likely for several reasons. First, the sample size of this study is small with only four of both control and impact sites. Secondly, inter annual variability due to larger scale processes appear to be affecting both control and impact sites. For example, decreases in CSCI observed across all control and impact sites between 2013 and 2014 (Figures 10, 11), with 2014 being the 3rd year of a drought cycle and having the lowest average annual discharge of the last 18 years (Figure 1). Lastly, the most significant post-fire impacts to stream reaches downstream of the wildfire likely occurred during the 2015 water year (WY) as documented by USFWS (2015a). The effects of the atmospheric river precipitation events, flooding, and sediment inputs in the 2015 WY across all potentially affected tributaries went undocumented by BCWC stream monitoring due to a lack of funding."

Example: SPI 2015 Work Plan. Page 221 and 390-404 add SPI's Battle Creek Work Plan (2015) ostensibly written for the Central Valley Regional Water Quality Control Board (CV Water Board). We wrote about it in our comments for the previously submitted Artemis plan. Nothing has changed.

The Work Plan is a document similar to this logging plan, in that it is primarily generalized information with little specific factual evidence. We have spoken with CV Water Board staff to ascertain what follow up information they have received that the SPI Work Plan itemized. The staff mentioned that the work plan was not part of any regulatory requirement, so the work plan and the actions outlined in it are not enforceable by the Water Board.

The Work Plan document details many action items, including providing the CV Water Board with an annual report of SPI's follow up to the Work Plan items, beginning in 2016. As of 2020 staff at the CV Water Board have not received any reports for any of the action items (CV Water Board 2020).

The entire SPI Work Plan consists of statements on paper that have produced no subsequent reports or solid data with appropriate explanation of methodology to inform a reasonable analysis of SPI's impacts. The current logging plan again lacks the basic

information to perform a reasonable analysis of its impacts. Consequently, this plan does not conform to the FPRs or the PRC laws.

On page 402 of the plan the Work Plan states: "the following map summarizes SPI Monitoring Activities in the Greater Battle Creek Watershed" but there is no map on the page or later. There was no map in the earlier Artemis version of this plan either, as we wrote in 2018. There was no map with the document in the Rio Gatito plan, as we wrote in 2020. This is either a purposeful omission of relevant information, or another example of the cutting and pasting of the same generic information in plan after plan. Either way, it does not meet the standards encoded in 14 CCR 897 that "the information in [THPs] shall also be sufficiently clear and detailed to permit adequate and effective review".

Example: Page 215 The Past Projects List abuses the planning watershed delineation again by listing only the acreages of past plans that fell inside of the small Upper Digger Creek planning watershed.

Following is the significant difference between what the "Past Projects" lists in this plan and how many acres the plans actually were:

2-04-166 TEH (Hazen) **22 acres** listed; the plan was **2,115 acres**

2-10-003 TEH (Dry Gulch) **5 acres** listed; the plan was **1,048 acres**

The list does not include the 2-03-158 TEH (Digger) plan at all, which was **993 acres**.

Figure 37 is a map constructed by BCA over the years of plans up until 2012. The map illustrates how the arbitrary planning watershed boundaries and the misleading Past Projects list have no correlation to the physical reality that all the plan units are continuously situated near one another.

The small geographic scope of the assessment area used by SPI in this, and past, logging plans, is precisely the type of truncated analysis that the cumulative impact assessment is meant to protect against. *See EPIC v. Cal. Dept. of Forestry & Fire Protection*, 44 Cal.4th at 525.

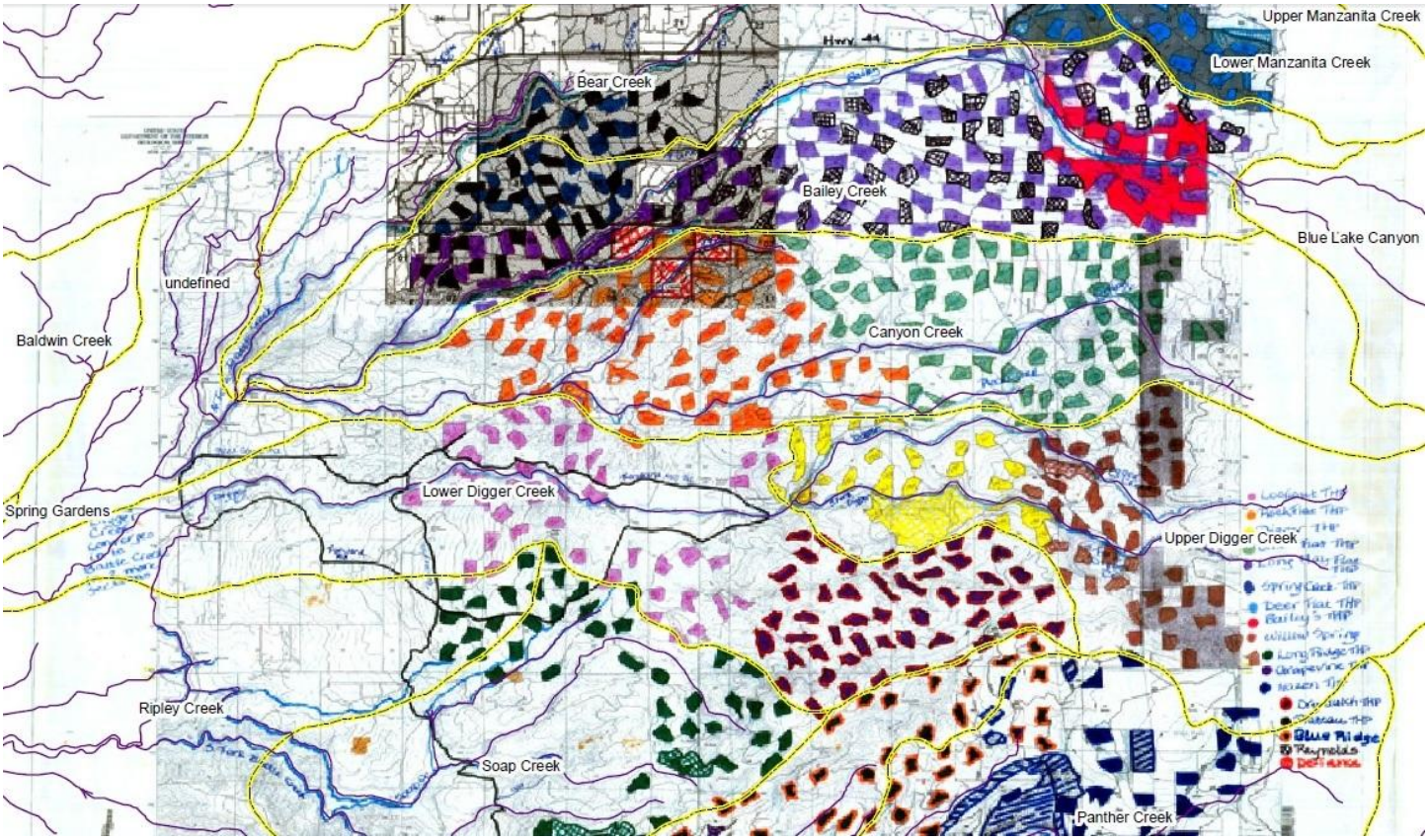


Figure 37. BCA map of some of the logging plans through 2012. Yellow dotted lines are planning watershed boundaries. The plans from the Past Projects List are: Hazen, 2,115 acres marked in blue in the lower right corner; Willow Spring, 942 acres marked in brown above Hazen; Dry Gulch, 1,048 acres marked in purple with red outlines to the left of Willow Spring. The Digger THP was not included in the Past Projects list, but is marked in yellow; it was 993 acres.

Example: Page 216-217 SPI has inserted an erroneous paragraph into this plan on these pages regarding the Lewis et al. research paper that was published online in 2018 and in the scientific journal "Environmental Management" in 2019. This paper analyzed BCA's water quality data that began being collected in 2009. This is another in a long list of attempts by SPI to suppress factual evidence which demonstrates that their logging practices have significant adverse effects.

Mr. Lewis responded to the paragraph's claims in a letter we submitted to Cal Fire when we first knew of the paragraph in October 2020 (Battle Creek Alliance 2020 b). We provided evidence from Mr. Lewis and asked for the demonstrably false paragraph to be removed from this plan. Cal Fire refused.

As documented in our attachment "Battle Creek Alliance Intimidation and Suppression Timeline (2020 a)" SPI has made many attempts to stop our collection of water quality data, its publication, and its use to provide relevant evidence regarding their ongoing practices and plans. SPI's inclusion of the paragraph in this logging plan continues their attempt to suppress relevant evidence and is another factual misrepresentation in this plan.

These long-term suppression and intimidation attempts began in 2010 and have continued in the ensuing years as documented by the various emails and letters referred to in the following timeline. The timeline demonstrates the length of time that concerns regarding cumulative impacts have been ignored by SPI and Cal Fire practices.

Battle Creek Alliance (BCA) Timeline of Cal Fire and Sierra Pacific Industries (SPI) attempts to suppress our work/evidence

Supporting documents that have been submitted to Cal Fire are listed in parentheses.

2009 BCA begins Citizen's Water Monitoring Project, collecting samples using public roads in the Battle Creek watershed.

2010 March: SPI sends 1st threatening letter regarding BCA's data collection, attorney Rene Voss responds in June (Voss, Woodhouse letter 2010)

Oct.: Cal Fire releases an Official Response to the Plateau Flat logging plan (2-09-027SHA) in which it refers to BCA as "plagiarizing" a document that had been given to BCA by hydrologist Jon Rhodes, with his permission to use it. BCA asked Cal Fire to remove this insult and lie from its official, public record for several years. Cal Fire ignored the request every time and never removed it. (BCA 2010 Plateau plagiarist)

2011 SPI employee Cajun James makes baseless trespassing remarks at public meetings on 3/15/11 and 5/17/11

2012 Jan.: Attorney Rene Voss sends SPI employee "Cease and Desist" letter regarding libelous statements at public meetings in 2011. (Voss Jan 24, 2012)

Feb. 6: SPI sends another threatening letter to BCA director with baseless claims of criminal trespassing, copyright infringement; attorney Rene Voss responds in April. (Voss April 5, 2012)

Feb. 25th: SPI sends Shasta Co. Sheriff Deputy to BCA director's house to threaten her with arrest for criminal trespass. He says they have evidence; she asks what it is, he says he doesn't have to tell her. He tells her she can't get out of her vehicle to take samples on the public county road. She asks what law that is; he responds that he doesn't have to tell her.

April-June: Hydrologist Tom Myers, who is analyzing BCA data to write a report, and Justin Augustine from Center for Biological Diversity, visit Battle Creek sites on county roads in April. In June, they and BCA receive another threatening letter from SPI trying to stop BCA water data collection. (Myers and Augustine 2012)

In August, Ponderosa Fire burns on 27,000 acres of land, 2/3rds SPI ownership. It is logged under emergency exemptions with no environmental review required.

2013 Dec.: BCA director files complaint against Cal Fire Timber Harvest Review Team Chair and practices. (Battle Creek Alliance 2013)

2014 June: Brief, form letter from Cal Fire which offered no substantive response to BCA complaints, received by BCA. BCA asks for a list of who was interviewed; request is ignored, no interviewee list is provided. BCA director was not spoken to by investigator.

2015 April: BCA director and other women environmentalists begin to receive Cal Fire whistleblower emails, detailing the hidden practices at Cal Fire e.g. the Review Team Chair calling the women "fucking bitches" at agency meetings. (Cal Fire whistleblower emails)

Nov: Statistical hydrologist Jack Lewis started reviewing our data and producing reports in 2014. Cajun James/SPI contacted him a number of times to try to influence him against working for BCA. In Nov. 2015, as he was working to publish his analysis he wrote in an email to Cal Fire employee Pete Cafferata that James had called him to threaten "she would make sure that it did not get published". (Lewis Cafferata emails 2015)

2017 June: We discovered through emails we received from a Public Records Act request that Cal Fire employees had reviewed Jack Lewis' manuscript (submitted to a scientific journal) regarding significant effects occurring from logging in Battle Creek watershed. In these 2016 emails the Cal Fire employees wrote of their intent to get the paper rejected. Consequently, we filed a complaint with Cal Fire and the Natural Resources Department. (Cal Fire Complaint 6-2017)

On Aug. 18th we received a response from Russ Henly, Natural Resources, that dismissed all of our concerns. On Aug. 22nd, we wrote to Monte Manson, CDF Chief, Professional Standards Program (Cal Fire complaint 8-2017). We received a dismissive reply. On Sept. 20th we asked for a list of who he interviewed regarding our complaint and any other evidence he considered. There was no reply. On Nov. 3rd, we wrote again to say we received no list of interviewees or other evidence. Again, there was no reply. (BCA to Monte Manson 2017). The refusal to provide any evidence to us that was used in decisions or investigations has been the pattern throughout the years and has occurred many other times than are detailed here.

2018 At the public Board of Forestry March 2018 meeting SPI employee Cedric Twit presented disinformation and veiled slurs about our research paper and hydrologist Jack Lewis during the comment section of the meeting, including saying our paper was unpublishable. BCA wrote a letter to the BOF but received no reply. (BCA to BOF 3-19-18.) An audio recording of the meeting is here:
https://www.youtube.com/watch?v=hMpIVvioANA&feature=youtu.be
Our research paper was published in the scientific journal *Environmental Management* online in April 2018, and in the print version in 2019.

2019 From January to April BCA worked with Erick Burres, State Waterboard Monitoring Coordinator, to update our Quality Assurance Project Plan (QAPP) and to upload our data to the State CEDEN site (California Environmental Data Exchange Network). On April 29th, we received an email from Mr. Burres that SPI had contacted him to say BCA was

trespassing to obtain water samples. (Burres 2019.) BCA director and Mr. Burres spoke on the phone afterwards. He informed her that SPI was demanding that BCA data not be allowed to be uploaded to the CEDEN site. BCA sent a letter to again answer the baseless accusations by SPI. (BCA to Burres 2019.)

2020 On October 18th, 2020 BCA found that SPI had inserted an erroneous paragraph into resubmitted plan 2-20-00159 SHA "Powerhouse" in an attempt to invalidate our research paper. We sent emails and evidence to Cal Fire between October 18th and 30th, asking for the paragraph to be removed. Cal Fire refused. (Cal Fire Ramaley 2020 erroneous paragraph emails and BCA Erroneous paragraph in THP letter 2020.)

G. Herbicide Data is Not Specific to Plan, Therefore Required Cumulative Impacts Analysis Cannot Be Made.

Page 178-185 states that SPI has collected 4,506 herbicide samples "from across our lands" (1.7 million acres) since 2000. There is no detail given if any samples were collected from the planning watershed in this plan, or what year(s) the samples were collected. As with other SPI self-reported results detailed throughout this comment, there is no basic methodology regarding their sample collection supplied. We spoke to the Central Valley Water Board to ask for any information they have been given by SPI regarding the data collection. The Water Board has no information or knowledge regarding how SPI collects its samples. Without knowing anything about the geographic location of where the samples were collected or if samples are collected upstream or downstream of logging and herbicide application, after rainfall or in dry periods, and the length of time since herbicide application, any self-reported results from SPI prove nothing about what effects are occurring, and are not the factual evidence the THP requires.

Additionally, CV Water Board staff informed us during the 2018 Artemis version of this plan: "I'm unaware of any herbicide sampling done by SPI, or their methods for when they do that type of sampling. We have learned that grab samples cannot gather enough water to detect pesticides, so if they do grab samples they probably will come back non-detect. To clarify, It's an issue that the pesticides are only detectable at very, very low concentrations. From a stream or river, a typical 1-liter bottle doesn't have enough of the chemical in it to be detectable, thus very special methods are needed to detect pesticides in aquatic environments. The USGS is working on a sampling methodology to detect these, but we currently don't have this sampling method, at least one that has been vetted." (CV Water Board 2018.)

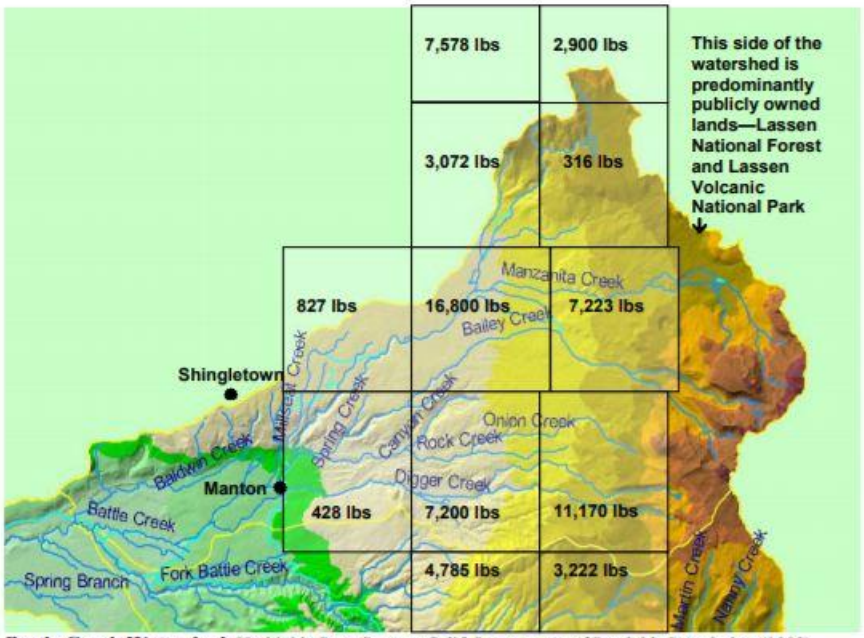
SPI's pages regarding herbicide testing are exactly the same in every THP we have seen, i.e. copied and pasted generalized information. SPI states that they collect grab samples. Therefore, the CV Water Board statement makes it clear that SPI's samples and results are invalid. This is the third comment we have included the CV Water Board's statement in, yet SPI continues to copy and paste the same misleading statements into their logging plans.

The lack of validity of SPI's herbicide sampling, along with the continuing use of large amounts of herbicides upstream of fish habitat and public water supplies, are more potentially adverse significant impacts that Cal Fire's current practices have allowed for decades with no analysis.

Page 184 of the plan states "...on any given acre of SPI's forestland, application of herbicides may occur once or twice every 60-80 years." This is a deceitful concealment of what really occurs on the land overall, and does not fulfill the requirements for analyzing significant cumulative impacts. Figure 38 is a map made in 2008 from Department of Pesticide Regulation data of herbicide use in the Battle Creek watershed between 1996 and 2006. We do not have the staff to update this map, but the regulatory agencies should be doing this work in order to complete an adequate cumulative impacts analysis. This map has been submitted in our past comments. What has happened in the 14 years since this data was assembled? No one knows because the amount of usage is not reported in the logging plan and there is no known, valid data from monitoring. As may be seen in the Figure, there have been many thousands of pounds of herbicides applied to the area of this plan and all the acres around it, and it has been much more frequently than "once or twice every 60-80 years".

BATTLE CREEK WATERSHED, SHASTA AND TEHAMA COUNTIES

Sierra Pacific Industries (SPI) Forestry Herbicide Applications



Battle Creek Watershed. Herbicide Data Source: Calif. Department of Pesticide Regulation (2008), Current data are available only to 2006.

Township & Range	Lbs. herbicides	Date range
T33NR3E	2,900 lbs	2000-2006
T33NR2E	7,578 lbs	2001-2006
T32NR3E	316 lbs	2005
T32NR2E	3,072 lbs	1998-2006
T31NR1E	827 lbs	1999-2005
T31NR2E	16,800 lbs	2000-2006
T31NR3E	7,223 lbs	1997-2006
T30NR1E	428 lbs	2004-2005
T30NR2E	7,200 lbs	1999-2006
T30NR3E	11,170 lbs	2001-2006
T29NR2E	4,785 lbs	1996-2006
T29NR3E	3,222 lbs	1998-2006

Chemicals used include atrazine, hexazinone, imazapyr, glyphosate, triclopyr BEE, 2,4-D, sulfometuron methyl, and a variety of additives and surfactants.

TOTAL: 62,621 pounds of herbicides were applied by Sierra Pacific Industries in the Battle Creek Watershed in the last decade. Of this, 17,834 pounds were applied aerially. This total does not include additional spraying in 2007 and 2008.

Battle Creek watershed is the site of a $43 million state and federal salmon and steelhead recovery project. The streams in this watershed are critical habitat for federally listed threatened and endangered salmon and steelhead.

Figure 38. Past SPI herbicide use in the Battle Creek watershed 1996-2006. This map/data demonstrates the length of time that SPI's practices have been approved by Cal Fire with no substantive analysis of the cumulative impacts on downstream fish habitat and public water supply.

Page 185 of this plan also cites a 1997 DiTomaso paper entitled "Post-fire herbicide sprays enhance native plant diversity". This is another reference which has been copied and pasted into every SPI THP for years. Again, its study areas were not in the Battle Creek watershed, or more specifically, not in the upper Digger Creek planning watershed. One of its study areas was in the Fountain Fire vicinity between Round Mountain and Burney, soon after the fire in 1992. Figure 39 is representative of what a plantation in the area of the Fountain Fire looked like by 2013. There is no plant diversity in it, contrary to the DiTomaso paper's claim that herbicides enhanced plant diversity.

Figure 39. A plantation in the Fountain Fire area, photographed in 2013. The Fountain Fire burned in 1992. There is no real plant diversity here, contrary to the 1997 paper the THP cites.

SPI has provided no recent relevant information regarding the dangers of herbicides and their effect on humans, wildlife, aquatic habitat, and water quality. Our references provide abundant information regarding the significant effects. See: Cox, 1996, Cox, 1998/2000, Doyle, 2004, Pimentel et al., 1992(b), Relyea, 2008, Richard et al., 2005, Sierra Club Canada, 2005, Zhang et al., 2019.

H. No Assurance in Plan that Plant Protection or Retention will Occur

Plan pages 246-249 The three brief, generic pages regarding plants in this plan use phrases such as "comprehensive review" "protection measures" "retention area to ensure no substantial reduction to the number". This is another instance where what the paper plan says has no correlation to what actually occurs on the ground.

We wrote extensive comments regarding the 2006 Lookout THP which is slightly west/downstream of this plan. Some of the units had occurrences of a rare plant, *fritillaria eastwoodiae,* as does this plan. Details of what occurred on the ground in that plan are representative of the factual practices that SPI uses, as opposed to the fiction their plans state.

The Lookout THP downstream of this proposed plan included the following information on page 21.4 (revised 4-2-07):
"Prior to timber operations, an additional survey for *Fritillaria eastwoodiae* will be conducted... Fritillaria spp were also observed in the vicinity of Units 17, 21, and 25...The Fritillaria in the vicinity of Units 22 and 23 shall be identified to species...The following are conservation measures: PPZs (Plant Protection Zones) shall be established in clearcut units where *Fritillaria eastwoodiae* is present..."

A botanist saw *fritallaria eastwoodiae* in Unit 25 in 2007. This is Unit 25 in 2007; the plants were near where the person in the blue shirt was standing:

Figure 40. *Fritallaria eastwoodiae* location in 2007 pre-logging, Unit 25.

Figure 41. Unit 25 post-clearcut in 2011, with no evidence of any attempt at a plant protection zone.

The other units the plant had occurred in:

Figure 42. Unit 17, post-logging 2011.

Figure 43. Unit 21, post-logging 2011.

Figure 44. Unit 22, post-logging 2011.

Figure 45. Unit 23, post-logging 2011.

There were no plant protection zones and no retention of the plants. We have no reason to believe that the practices would be any different on the ground during this plan.

Figure 46 is an example of *fritallaria eastwoodiae* growing near Digger Creek in an uncut area slightly west of this plan (T30 R2E Sec. 26). They grow in partially shaded areas with leaf litter and other plants, not in hot, open clearcut areas. SPI's practices are wiping out this plant's, and many other species', habitats.

"Ecosystems, species, wild populations, local varieties and breeds of domesticated plants and animals are shrinking, deteriorating or vanishing. The essential, interconnected web of life on Earth is getting smaller and increasingly frayed. This loss is a direct result of human activity and constitutes a direct threat to human well-being in all regions of the world," said Professor Josef Settele, co-chair IPBES Global Assessment Report on Biodiversity and Ecosystem Services (2019). https://www.unep.org/news-and-stories/press-release/natures-dangerous-decline-unprecedented-species-extinction-rates

Figure 46. *Fritallaria eastwoodiae* growing near Digger Creek in an uncut area, approximately 1 1/2 miles downstream of this plan. This is the habitat it grows in.

As is true for all the resources that have been adversely affected by past logging plans, there is no documentation or evidence provided in this plan that measure what trends have occurred in plant populations or how populations have changed. Therefore, the plan fails to measure the true cumulative impacts again, as have the past plans and approvals of them.

Zhang et al. (2016) writes that the "Extinction risk of North American seed plants [is] elevated by climate and land-use change". Part of their summary states "We show that

~2000 species may lose >80% of their suitable habitats under the A1b emission scenario for the 2080s, while ~100 species may experience >80% range expansions (a 20 : 1 ratio of loss to gain). When considering >50% range retraction and expansion, the ratio of loss to gain was 13 : 1. A greater loss of species diversity is expected at low latitudes, while larger gains are expected at high latitudes. Evolutionarily distinct species are predicted to have significantly higher extinction risks than extant species. This suggests a disproportionate future loss of phylogenetic diversity for the North American flora."

The importance of diversity to functioning ecosystems cannot be overstated, yet the ongoing logging practices have overlooked and ignored diversity for decades. Figure 47 shows the diversity in an uncut area directly downstream of the Powerhouse plan. Here there are numerous species and differing sizes of trees and understory plants. Plant diversity is also important to animal, bird, and insect species for shelter and food. Those species give back to the plant species in the form of organic material from both eating and dying in the timeless interconnections of life.

Figure 47. This 2021 photo shows diversity of species and sizes in an uncut area on the edge of the Powerhouse plan in T30 R2E Section 26. Ponderosa pines are just one species of many in the nearby area including: Douglas fir, white fir, incense cedar, sugar pine, black oak, alder, willow, big leaf maple, dogwood. This is what is being lost. This is what is irreplaceable in short timescales.

The water cycle (detailed in Section C. 2.), combined with soil health, also affects plant growth. This plan contains the standard generic responses that have been in past plans

regarding soils, while providing no consideration of the conditions on the ground and how they are degrading.

The cumulative impacts of replacing so many acres of grown and diverse forest with plantations of small ponderosa pine trees has not been addressed at all by this plan or the practices it continues. There is no discussion of the fact that the original growth of climax forest was mostly cut by the 1930s. The forest that has been being cut for the past 20 years is mostly 2nd growth forest, ~80 years old. The plantations being planted now during climate change and more extreme weather conditions are the third rotation in approximately 100 years. As Pimentel (1998) observes regarding the effects of soil erosion on productivity: "For example, the loss of soil organic matter increases water runoff, which reduces water storage capacity. This diminishes nutrient levels in the soil and also reduces the natural biota biomass and the biodiversity of the entire ecosystem". (See also Pimental et al. 1992 (a) for many ecosystem impacts from forestry.) Many of the trees in plantations are showing unusual yellowish color (Figure 48). This could be related to lack of soil nutrients, higher temperatures, or low rainfall amounts, or a combination of all of those factors and more. Since apparently no one is discussing those effects or studying them, there is no effort to understand or address the ongoing cumulative impacts occurring to plants, soils, and climate occurring in the area of this plan.

Figure 48. Ponderosa pines showing yellow color on Forwards Mill Road (T30 R2E Section 22) in February 2021, downstream/west of the Powerhouse THP. This unhealthy discoloration is commonly occurring in the replanted, third rotation pine plantations in the logged areas of Battle Creek; the grown forests are also showing signs of stress with discoloration, and many dead needles/dead trees.

Nothing in this plan or SPI's practices meaningfully address the trends and threats occurring to plants and other biological resources. There is no evidence to support their practices, and no attempt to practice any kind of conservation of irreplaceable species. These practices are specifically contrary to CEQA laws.

V. Climate change impacts ignored in the logging plan and SPI's Option A.

We wrote of some interconnected climate change impacts in the preceding sections C. 2. Water Cycle and D. Wildlife and Habitat. Section D also includes more details regarding SPI's Option A.

Ellison et al. (2017) writes: "Forest-driven water and energy cycles are poorly integrated into regional, national, continental and global decision-making on climate change adaptation, mitigation, land use and water management. This constrains humanity's ability to protect our planet's climate and life-sustaining functions. The substantial body of research we review reveals that forest, water and energy interactions provide the foundations for carbon storage, for cooling terrestrial surfaces and for distributing water resources. Forests and trees must be recognized as prime regulators within the water, energy and carbon cycles... The effects of tree cover on climate at local, regional and continental scales offer benefits that demand wider recognition."

There is no recognition of forests' impacts on climate in this plan. (See Ellison 2017, Vickers 2012, Pokorny 2010.)

There is no substantive evidence in the plan to prove that the mass removal of forest cover in the 75,000 acre block of industrial timberland, and the surrounding areas, is not a deleterious cumulative addition to climate change impacts in the local area.

None of the important aspects detailed in Ellison et al. and throughout literature have been accounted for in this plan or in SPI's Option A. These aspects are part of a large significant adverse impact occurring due to both SPI's logging practices, and Cal Fire's approval practices. These long-term practices have failed to uphold CEQA's rules that are meant to afford the fullest protection to the environment.

- SPI's Option A basis for their practices, and Cal Fire's approval of plans based on SPI's Option A, have no relevance to current or future conditions. The Option A is a purely speculative document with no facts or evidence to prove it is true in 2020 or will be true in future conditions.

Page 204 of this plan cites to another of SPI's documents "Carbon Sequestration in Californian Forests: Two Case Studies in Managed Watersheds". This SPI-produced document was found to have significant flaws in its methodology when reviewed by Peter Miller (2008). One of his conclusions is "A critical review of this study demonstrates that, contrary to

the report's conclusions, replacing existing diverse forests with uniform tree plantations is unlikely to produce significant carbon benefits and will instead increase the risk of catastrophic fire and threaten the extensive range of benefits provided by existing forest ecosystems."

The only documents that support SPI's practices are the documents their own staff produces. The carbon sequestration document is another example of their self-produced findings that has been debunked. SPI continues to submit this and other fallacious documents in its plans and Cal Fire continues to accept them, despite the evidence that the reports are deeply flawed and unreliable.

Harmon (2010/2021) Zald et al. (2016) and DellaSalla (2018) have all reviewed Cal Fire's carbon calculator and found significant flaws in it. The flawed calculator continues to be used in this plan and others though, significantly ignoring the carbon stored in soils and dead wood. For just one example: DellaSalla (2018) writes "The report is also silent on carbon retention times even though long-term carbon stores (live and dead pools above and below ground) are critical to climate stabilization".

Vickers et al. (2012) studied the difference in carbon fluxes and water use efficiency between young ponderosa pine plantations and older (50-250 years) forests. Some of their findings were: "The mature forest with larger leaf area and wetter and cooler soils has a net uptake of carbon 3.3 times that of the young plantation… Patterns of photosynthesis, inherent water-use efficiency (IWUE) and tree transpiration indicate that the young plantation responds to the seasonal drought sooner and to a more severe degree." Nowhere does this plan even acknowledge these important adverse effects, nor does it offer any mitigations for the devastating loss of canopy cover in the large central block of industrial timberland in the Battle Creek watershed.

Figure 49 illustrates more logging/forest canopy reduction in 2020, adjacent to part of the large unrecovered area of the 2012 Ponderosa fire, west of this proposed plan. The plan does not disclose this additional logging because it is outside the narrowly limited area of the plan's assessment area. The limited assessment area in this plan combined with past plans has allowed the forest cover to be lost at a high rate in this crucial time in the world. There is no mitigation which repairs this loss, particularly in the short term.

As far as we know, no one is even attempting to understand what kind of impacts the higher heat and disrupted water cycle from the immense loss of canopy cover in the industrial timberland below it is having on the Lassen National Forest land to the east of this particular area. Certainly there is no evidence in this plan, past plans, or Official Responses that SPI or Cal Fire think about it at all.

Figure 49. The Reynolds Flat THP was filed in 2012, but all of its units were not cut; some of the units were interspersed with the area burned in the 2012 Ponderosa fire. In the summer of 2020, around the time fires were starting all over California, the Reynolds units were cut, adding more open, dry land to the watershed which fails to dissipate incoming solar radiation.

VI. Summary of SPI citations included in Powerhouse plan, which do not support SPI practices

In our years of submitting comments regarding logging plans, one of the common experiences we have had has been that no matter what kind of documentation we submit, Cal Fire's Official Responses deride, dismiss, or ignore our submissions (see ORs for 2-06-173 Lookout, 2-08-052 Bailey's, 2-08-097 Long Ridge, 2-09-027 Plateau Flat, 2-10-003 Dry Gulch, 2-10-034 Grace, 2-10-067 Blue Ridge, 2-12-026 Reynolds Flat, 2-12-031 Hendrickson-Defiance, 2-18-055 Graceland, 2-19-00180 Rio Gatito). Along with this practice, Cal Fire holds SPI to much lower standards and does not provide any evidence that they have analyzed SPI's references as exhaustively as they do ours.

We have reviewed some of SPI's references which are cited as support for this plan below, because Cal Fire practices during plan approvals present no evidence that they have done so. This review finds that most of the references are not from the specific area this plan has

chosen as its assessment area, and that the ones we have had time to review do not support the generalized conclusions and speculations about future conditions the plan alleges.

There are dozens of citations in this plan's Section 4. Mostly all have been cut and pasted from SPI's previous plans. Mostly all are old and exclude recent research. Under scrutiny, these references do not support the THP's conclusions. The inclusion of many as supporting SPI's claims is false and misleading.

The 1981 Lisle paper regarding erosion and sediment transport listed in SPI's references is almost 40 years old and was performed in a north coast watershed regarding the impacts of a 1964 flood. If we submitted this paper, it would be dismissed as not relevant to the THP area by Cal Fire. Why is SPI allowed to reference it with no dismissal by the Review Team?

The study area of the 1993 Sakai paper regarding wood rats was also in northwestern California. If we submitted this paper, it would be dismissed as not relevant to the THP area by Cal Fire. Why is SPI allowed to reference it with no dismissal by the Review Team?

The study area of the 2008 Reno/SPI document was in Trinity County near Hayfork and northwestern Shasta County near Castle Crags. If we submitted this paper, it would be dismissed as not relevant to the THP area by Cal Fire. Why is SPI allowed to reference it with no dismissal by the Review Team?

The 2008 SPI/Murphy produced document regarding canopy regrowth in planted forests is only 6 pages long and has no description of where the plots were, except for an unlabeled map on page 6. Judging by using the position of Lake Almanor on the map it appears there were no plots measured in the block of Battle Creek timberland this THP is situated within. If we submitted this document, it would be dismissed as not relevant to the THP area by Cal Fire. Why is SPI allowed to reference it with no dismissal by the Review Team?

--Additionally, it takes more than low canopy cover of mostly a single species of tree to create and sustain biodiversity of plant, vertebrate and invertebrate species. Technical Rule Addendum No. 2 states in C. 4., the biological habitat condition section, "The RPF may also need to consider factors which are not listed below. Each set of ground conditions are unique and the assessment conducted must reflect those conditions...Upland multistoried canopies have a marked influence on the diversity and density of wildlife Species utilizing the area." The Powerhouse THP continues the pattern of past plans and contains no quantitative evidence regarding the diversity or density of wildlife, past and present.

The 1997 Bull et al. paper cited in the plan is about trees and logs important to wildlife in Washington, Oregon, and Idaho in the interior Columbia River Basin. Using the Cal Fire rationale applied to studies we submit, this report is not relevant to the Digger Creek planning watershed,

The 2018 Forest Carbon Action Report cited by SPI was extensively reviewed by the Center for Biological Diversity (CBD) and found to be misleading in many ways (CBD 2017). It is more of a state-wide policy document which has nothing site-specific to the Digger Creek planning watershed and is not evidence to support this plan.

Further SPI references which do not support their practices:

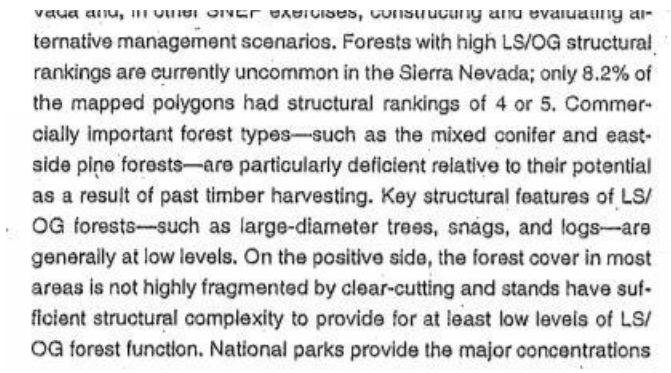
Baldocchi 2008. "Breathing of the terrestrial biosphere: lessons learned from a global network of carbon dioxide flux measurement systems". Another paper on a broad scale which says nothing about any measurements from Battle Creek watershed or planning watersheds. Does say "ecosystems losing carbon were recently disturbed".

Brown 2004. "BASELINE GREENHOUSE GAS EMISSIONS FOR FOREST, RANGE, AND AGRICULTURAL LANDS IN CALIFORNIA". From 2004, no specific measurements to Battle Creek.

DOE 1605b. "Technical Guidelines for Voluntary Reporting of Greenhouse Gas Program" from 2006. Note 14 years old and voluntary. Measurement systems have been evolving ever since then. No specific measurements to Battle Creek.

Ferrell 1996 Sierra Nevada Ecosystem Project (SNEP) report "Influence of Insect Pests and Pathogens on Sierra Nevada Forests". Does not support SPI's practices and says nothing about any measurements from Battle Creek watershed or smaller planning watershed.

Franklin and Fites 1996. Another 1996 SNEP report "Assessment of late successional forests". Excerpt:


vada and, in other SNEP exercises, constructing and evaluating alternative management scenarios. Forests with high LS/OG structural rankings are currently uncommon in the Sierra Nevada; only 8.2% of the mapped polygons had structural rankings of 4 or 5. Commercially important forest types—such as the mixed conifer and eastside pine forests—are particularly deficient relative to their potential as a result of past timber harvesting. Key structural features of LS/OG forests—such as large-diameter trees, snags, and logs—are generally at low levels. On the positive side, the forest cover in most areas is not highly fragmented by clear-cutting and stands have sufficient structural complexity to provide for at least low levels of LS/OG forest function. National parks provide the major concentrations

Note that even in 1996 there were LS/OG (late successional/old growth) deficiencies and low levels. And that was 25 years ago when they write "the forest cover…is not highly fragmenting by clear-cutting" which was true in 1996, but is clearly not true now in 2020.

Franklin et al 2000. Regarding fitness in northern spotted owl populations. Study area was near the north coast, nowhere in the Sierra or Cascades, much less in Battle Creek, since Battle Creek is out of their range.

Graber 1996. Another 1996 SNEP report "Status of Terrestrial Vertebrates" Nothing in this report is supportive of SPI/CDF practices. In fact, it clearly states 25 years ago that their types of practices are detrimental.

Haig et al. 2001 regarding geographic variations in spotted owls. Maps do not include the Sierra, much less Battle Creek. (There are California spotted owls in Lassen Forest.)

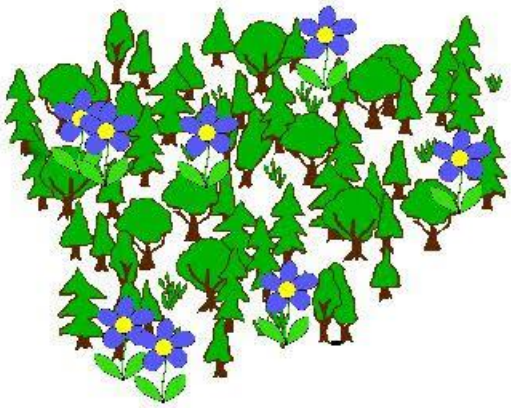
Helms 1996 SNEP report "Silviculture in the Sierra". An old, broad overview with no real pertinence to SPI's practices; most certainly no pertinence to cumulative impacts from 1998 to the present.

Howe 1989. Genetic Effects of even and uneven aged management, presented at some conference in Alaska in 1989. Dated (30+ years old) and unpublished, so no way to determine its validity or applicability to SPI methodology.

Hurteau 2009. "Fuel treatment effects on tree-based forest carbon storage and emissions under modeled wildfire scenarios" Note this was based on a "model" rather than on-the-ground data and it was modeled from data in the southern Sierra, east of Fresno.

Information Ventures 1995. Some brief sheets from 1995 regarding some of the herbicides SPI uses, produced by a consulting firm. Not up to date regarding herbicide effects.

James 2012. SPI's supposed comparison of floristic diversity, produced by SPI employees. This document is representative of what SPI does in all documents they produce-- they disguise the truth with different forms of manipulation. This study used "species richness" for the comparisons between cut and uncut forest. While that is an accepted way to do counts in some circumstances, for SPI it serves to really obscure the reality on the ground. That's because "richness" gives a numerical value to number of species, while ignoring the "abundance" or number of individuals within the species. The easiest way to explain this is with drawings:



Clearcut Plot ↑ **Uncut Plot ↑**

Figure 50.

Using "richness" both the plots in Figure 50 would be given the same rating of "1" because the species is in both areas. But with "abundance" added the rating would be 1 for the clearcut area vs. 8 for the uncut area. Here's another drawing for understanding:

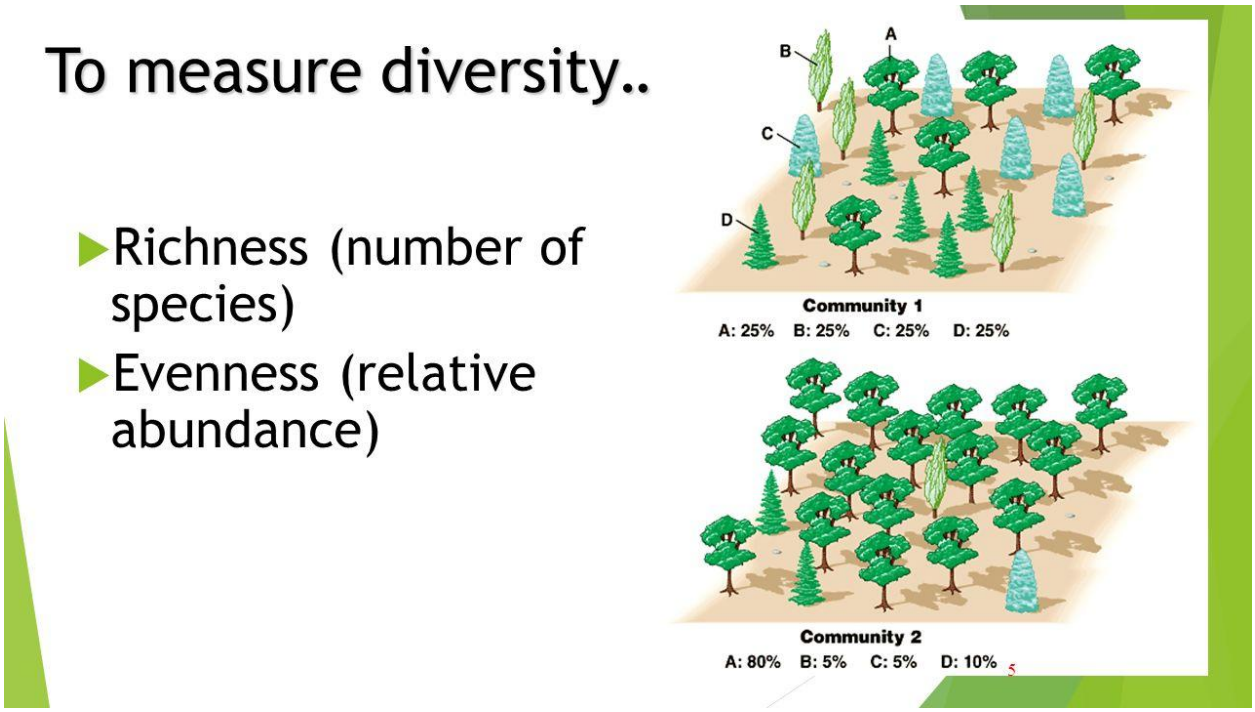


Figure 51. Clearly "Community 1" is more diverse. Using only richness as a parameter while ignoring abundance would give both communities the same rating.

Krohn 1995. Fishers and martens and how snow conditions affect them. Does talk about logging some but has no real relevance to Battle Creek, particularly since there are either no known fisher populations here.

Krohn 1997. 1989-1994 surveys of fishers and martens on Nat'l forest land. No relevance to SPI land, practices, or populations.

Lenihan 2006. "THE RESPONSE OF VEGETATION DISTRIBUTION, ECOSYSTEM PRODUCTIVITY, AND FIRE IN CALIFORNIA TO FUTURE CLIMATE SCENARIOS SIMULATED BY THE MC1 DYNAMIC VEGETATION MODEL" Another model based document from 2006 with no measurements specific to Battle Creek. It does state (14+ years ago): "Considerable uncertainty exists with respect to regional-scale impacts of global warming. Much of this uncertainty resides in the differences among the different GCM climate scenarios as illustrated in this study. In addition, models that translate climatic scenarios into projections of ecosystem impacts can always be improved through reexamination and improvement of model processes. Nevertheless, the results of this study underscore the potentially large impact of climate change on California ecosystems and the need for further use and development of dynamic vegetation models using various ensembles of climate change scenarios."

McDonald 1996. Another 1996 SNEP section "Silviculture-Ecology of Forest-Zone Hardwoods in the Sierra Nevada". Contains this, contrary to SPI practices:

Artificial regeneration in a conventional sunlit plantation is beset with problems, especially lack of consistent and reliable seedling growth. Partial shade appears to be mandatory, but how much and until when is unknown.

McKelvey 1992. "Historical Perspectives on Forests of the Sierra Nevada..." History of early 1900s logging of Plumas Co on south-- nothing about northern Sierra. Not pertinent to current logging, climate change, habitat fragmentation, water cycle disruption.

Oliver, SNEP 1996 "Density Mgmt of Sierra Nevada Forests". This is all about thinning forests--there is nothing that supports clearcutting, particularly of 60,000+ acres out of 75,000 acres as SPI has done in Battle Creek.

Olson 1996. Research from Blodgett Experimental Forest of growth between 1933-1995. Blodgett is near Georgetown in El Dorado County south of Battle Creek some hundreds of miles and the time period stops in 1995, before higher temperatures and less rain really started kicking in.

Powell 1994. An overview life history of fishers. Only pertinence to Battle Creek is that fishers were probably here in the past, but aren't anymore due to human actions.

Sakai 1993. Paper about dusky footed woodrats/northern spotted owls (NSO) in northwestern CA --the north coast, different conditions than inland. There are no NSOs in Battle Creek because it's outside of their range. There are CA spotted owls in Lassen Forest that likely move lower in the colder parts of the year.

Saspis 1996 SNEP Assessment of Fire Behavior in Sierra.:

When coupled with the information presented on risk here and in McKelvey and Busse (1996), these findings on hazard present a significant issue of concern for Sierra Nevada Ecosystems. Although findings on fire size and abundance indicate no trends in increasing amounts of fire in the Sierra (Erman and Jones 1996) what we may be seeing is an increase in fire severity resulting from stand and fuel condition changes resulting from harvesting and fire suppression. Further, with clear climate induced responses and an uncertain future in regard to incidence of severe fire weather, the prospects for fire related damage from extreme wildfire loom large. Fuel conditions in much of the Sierra Nevada support the potential for large fires exhibiting extreme fire behavior with likely undesirable effects. Future management of the region would be well served to understand this, and make hazard reduction an objective in any land management strategy.

Note: "what we may be seeing is an **increase in fire severity** resulting from stand and fuel condition changes **resulting from harvesting and fire suppression.**" "Hazard reduction" is not obtained by adding tens of thousands of acres of highly-flammable tree plantations.

Skinner 1995, Klamath Mountains (north coast) Changes in spatial characteristics of forest openings. "Watersheds with minimal human disturbance were chosen for study." No relevance to this area or SPI practices.

Skinner SNEP 1996, Sierra Nevada Fire Regimes. A history of fire and its ecological importance. No discussion of logging practices and certainly no approval of SPI practices.

SPI "Option A" from 1999 (32 pages), tied to one THP from then, which is broadly about all their land and has never been updated to acknowledge changing or diverse conditions. This document is based on SPI's projections for the next 100 years (from 1999) yet has not one word about climate change in it. It's a delusional joke, yet every THP they submit uses the Option A as its basis.

SPI 2001 Snag Management Objectives. Another old document that SPI supposedly applies to their 1.7 million acres of land. What this document says, along with the THP, is completely divorced from their practices on the ground.

SPI 2008. Document regarding SPI's candidate conservation agreement for the release of fishers on their land in the Stirling area, Butte Co. south of Lassen Nat'l Forest. Nothing to do with Battle Creek, although one of the collared fishers released there booked up to Battle Creek, but carefully avoided clearcut areas (according to his collar locations) and then disappeared.

Truex 1998. CDFW draft report regarding fishers in the Klamath range, north coast, and southern Sierra. No relevance to Battle Creek.

US EPA GHG Emissions Inventory 2015. Broad scale, far beyond watershed or planning watershed size.

USCCSP 2008."Scientific Assessment of the Effects of Global Change on the United States" Another broad scale assessment without any fine-scale relevance to Battle Creek. Page 140 of doc writes though: "In a review of fire activity in the western United States from 1974 to 2004, Westerling et al. (2006) found that both the frequency of large wildfires and fire season length increased substantially after 1985, and that these changes were correlated with advances in the timing of spring snowmelt and increases in spring and summer air temperatures. They concluded that earlier spring snowmelt contributed to greater wildfire frequency by extending the period during which ignitions could potentially occur and by reducing water availability to ecosystems in midsummer, thus enhancing drying of vegetation and surface fuels (Westerling et al., 2006). These trends in increased fire size correspond with the increased cost of fire suppression (Calkin et al., 2005)." This is another example of SPI's own cited references disagreeing with both SPI's statements in plans and Cal Fire's determinations, approvals, and conclusions that there are no cumulative impacts occurring.

USFWS 2001 letter regarding "Formal Endangered Species Consultation...Sierra Nevada Forest Plan Amendment" An old biological opinion letter which only covers federal land, not private timberland. Species list is at least 20 years out of date.

Verner 1992. Assessment of the Current Status of the CA Spotted Owl. Well, it was current in 1992. Where's the data for the almost 30 years since then? However, the habitat concerns that were expressed then have become even more prevalent from SPI's practices.

Areas of Concern

Our over-riding concerns for spotted owls in the Sierra Nevada conifer zone involve potential impacts of logging practices on their habitat (details in Chapter 13) and the extent to which selective logging and aggressive fire suppression in this century have created incendiary conditions in a majority of the low- to mid-elevation conifer forests (details in Chapters 11 and 12). In addition, we have identified several conditions that will bear further study and evaluation (table 3G, fig. 3A). These involve bottlenecks in the distribution of habitat or owl populations, gaps in the known distribution of owls, locally isolated populations, fragmented habitats, and areas with low densities of owls.

Weatherspoon 1992, Fire and Fuels Management in Relation to Owl Habitat. Again, does not support cutting down grown forests to replace them with single-species plantations of small trees; indeed, it underscores the importance of closed canopy forests to maintain humidity, reduce heating and drying of surface fuels and reduce wind velocity.

By comparison, success of initial attack on wildfires evidently is greater in areas of owl habitat within the Sierran mixed-conifer type. Countryman's (1955) description of fuel conditions within old-growth stands applies in large measure to fuel conditions within many mixed-conifer stands used by the California spotted owl. These stands are less flammable under most conditions, because the dense canopies maintain higher relative humidities within the stands and reduce heating and drying of surface fuels by solar radiation and wind. The reduction of wind velocity within closed stands discussed by Countryman is supported by wind reduction factors identified by Rothermel (1983) for stands with closed canopies. Windspeed at mid-flame height for fires burning in surface fuels is approximately one-tenth of the windspeed 20 feet above the stand canopy.

Weatherspoon SNEP 1996, Landscape-level Strategies for Forest Fuel Management. This is about fire primarily, nothing to do with logging or SPI/Cal Fire practices. The strategies suggested for landscape-level plans are as relevant today as they were 25 years ago, but have never been implemented.

Weatherspoon SNEP 1996: BCA quoted from this in our comment on page 40--it does not support SPI/Cal Fire practices at all.

Zielinski 1996, Southern Sierra Fisher and Marten Study. Like the title says "southern Sierra" as in Sequoia National Forest, Tulare County, far south of Battle Creek.

Zielinski 1997, Detection surveys from 1989-1994 for fishers and martens. 30 years old, no relevance to what has happened to population numbers and range since then.

VII. Endangered Salmonid Species, Battle Creek Restoration Project

Despite the fact that they are threatened and endangered, this plan barely mentions chinook or steelhead salmonids, never discusses how existing conditions created by past logging has affected the viability of these species' freshwater habitat in the watershed, and never discusses how the project-induced increases in sediment will interact with the existing conditions, and cumulatively with related past, present, and reasonably foreseeable projects. In short, for all the types of information necessary to assess this plan's cumulative impacts on salmonids, the plan provides none.

The Battle Creek Salmon and Steelhead Restoration Project was begun in 1999 and has not yet been completed. It is in the downstream reaches of the watershed below the industrial timberland block. This plan contains a brief update from 2020 regarding the project on pages 419-425. The update has nothing to do with cumulative impacts or this logging plan.

The ongoing 20 year Restoration Project, which has already cost $161 million dollars, is meant to restore the endangered salmonids that are downstream of SPI's land. One of the plan's few remarks about salmonid species is on page 209: "There is no known presence of anadromous salmonids or Rare, Threatened, or Endangered aquatic species in the plan area. Therefore, no Rare, Threatened, or Endangered species shall be affected by these operations". The only reason that statement could be construed as accurate is because of the wording that says "known" and "in the plan area". As we have explained in this, and past, comments SPI's practice of limiting effects considerations to a small area while ignoring downstream effects is misleading and does not conform to the laws and rules meant to safeguard the environment. There may be "no known presence" of the species in the small area of the planning watershed, but the species are present in the downstream planning watersheds that Digger Creek flows into.

Cal Fire states: "The Forest Practice Watershed Mapper allows users to identify the status of a specific planning watershed in accordance with the Anadromous Salmonid Protection (ASP) Rules, which require that every timber operation contribute to salmonid habitat restoration...The ASP Rules (2010) apply in planning watersheds with state or federally listed anadromous salmonids, and those that are restorable."https://frap.fire.ca.gov/frap-projects/forest-practice-watershed-mapper/

As may be seen in Figure 52, Digger Creek flows through this plan's Upper Digger Creek planning watershed. Its waters merge downstream with north fork Battle Creek to the west, which then merges with south fork Battle Creek. The Spring Gardens and Stillwater Plains planning watersheds downstream of this plan are listed as "Threatened and Impaired/ASP" which means Anadromous Salmonid Protections under 14 CCR 936.9 apply.

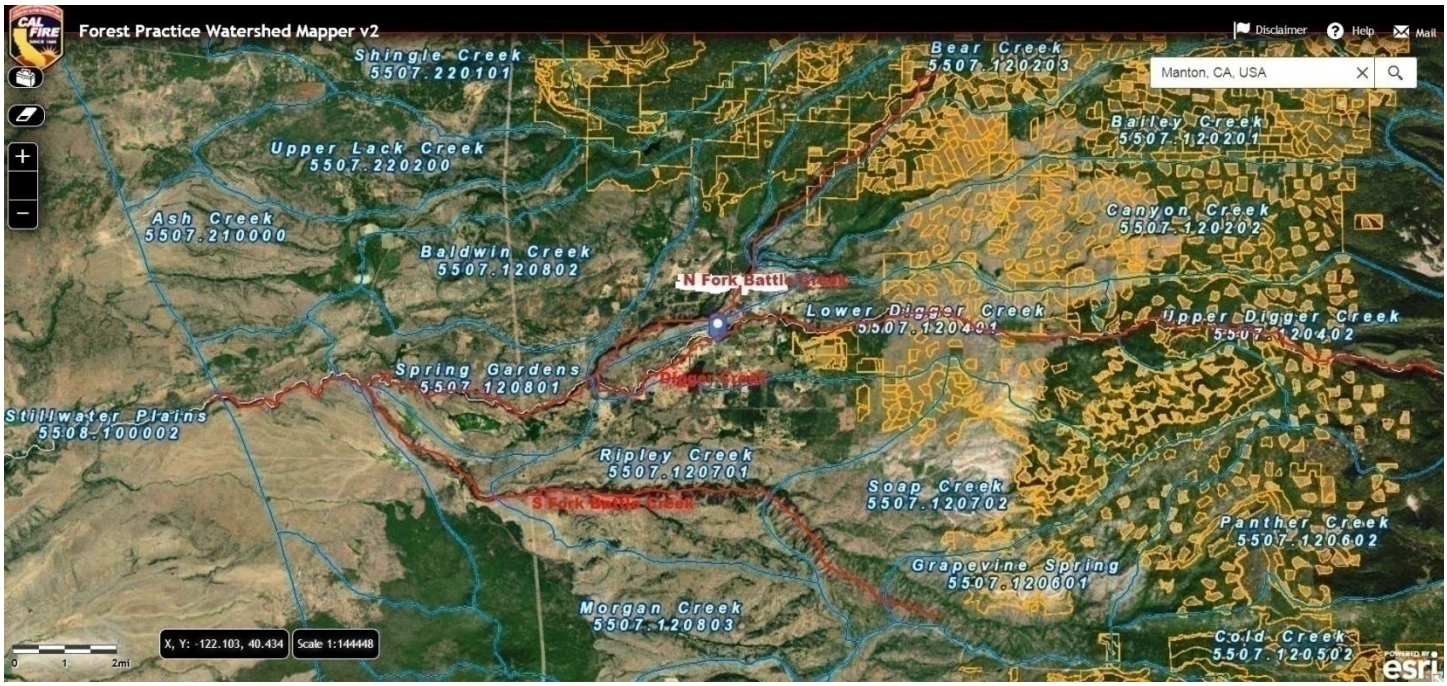


Figure 52. Some of the planning watersheds in the industrial timberland and west (downstream) of it. The names and numbers are marked in pale blue and outlined in blue. The red lines mark Digger Creek and the north and south forks of Battle Creek. Digger Creek joins with north fork Battle Creek which then joins with south fork Battle Creek, becoming the mainstem of Battle Creek.

There is no evidence provided that this plan will not have a significant cumulative impact on threatened and endangered salmonids. Given the failure to provide a fact-based assessment of the plan's cumulative water quality impacts, it is not surprising that the plan's assessment of cumulative salmonid impacts is also deficient. The plan contains no factual basis on which to determine that the addition of this plan, individually or cumulatively, will not adversely impact threatened salmonids and their aquatic habitat. The plan's entire discussion of baseline conditions, project impacts, and cumulative impacts on salmonids is lacking in any substance. SPI's two sentences in the plan contain none of the information required by CEQA to meaningfully understand the consequences of this plan on salmonids or their habitat. In place of the required project-level impact analysis, the plan relies on a short dismissal of the potential cumulative impacts on salmonids based on the small area of the planning watershed, while ignoring downstream populations and effects.

"State of the Salmonids II: Fish in Hot Water" (California Trout 2017) includes this: "At the current rate, California stands to lose 45% of its remaining native salmonids, including 11 of 21 anadromous species and 3 of 10 of its inland species, in the next 50 years unless significant actions are taken to stem the decline. (Figure 3). Under present conditions, 23 of the remaining 31 species (74%) are likely to be extinct in the next 100 years."

There is nothing in SPI's practices, or Cal Fire's ongoing approvals of those practices, that meaningfully address this, and the plethora of other adverse effects that the unending logging plans are contributing to.

VIII. Conclusion

This logging plan is not unique. All the plans submitted for logging projects in the Battle Creek watershed pay lip service to evaluating the proposed plans' cumulative impacts while failing to do so, as evidenced in this and other past comments from us.

SPI's present and past logging plans demonstrate that they have a pattern and practice of submitting the same shoddy and conclusory analyses of cumulative watershed impacts in all their plans in the Battle Creek watershed. Cal Fire has collaborated in these patterns and practices by approving the shoddy and conclusory analyses. Two of SPI's and Cal Fire's practices amount to a de facto policy, which has resulted in the ongoing water quality and aquatic, flora and fauna habitat impacts.

First, in each of the many Battle Creek logging plans, SPI has failed to submit quantitative, information-based assessments based on site- and project-specific information; Cal Fire has approved the deficient plans. SPI and Cal Fire adhere to a de facto policy that if a logging plan proposes to comply with the minimum required management practices identified in the Forest Practice Rules, the plan would by definition not contribute to any downstream cumulative water quality and aquatic habitat impacts.

The second practice is SPI's and Cal Fire's de facto policy to only address potential cumulative water quality and aquatic habitat impacts associated with a particular logging plan that are discernable within the planning watershed(s) in which the plan is located while not addressing downstream watercourses where relevant cumulative impacts are or would be present. The Rules say applicants and Cal Fire should **start** (not finish) by looking for cumulative watershed impacts at the planning watershed level, but that they also must consider whatever additional information or assessment area is required to fully assess cumulative watershed impacts (14 CCR § 898). But in practice, neither SPI nor Cal Fire ever look beyond the planning watersheds, even when presented with evidence of cumulative impacts occurring downstream, outside of the planning watershed.

Based on these operating procedures, SPI and Cal Fire have *never* concluded that a logging plan will result in a cumulative watershed impact. Yet there is substantial evidence that cumulative watershed impacts are occurring, and that logging is contributing.

The implementation of logging plans across the Battle Creek watershed have purposefully concealed and ignored the substantial alterations occurring to the environment. The addition of this plan will add to the heavy cumulative effects burden that already exists.

This plan must be denied.

Marily Woodhouse, Director, Battle Creek Alliance (writer)

Richard Halsey, Director, California Chaparral Institute

Justin Augustine, Staff Attorney, Center for Biological Diversity

Tom Wheeler, Executive Director and Staff Attorney, Environmental Protection and Information Center

Chad Hanson, Ph.D., Ecologist and Director John Muir Project

David Ledger, President, Shasta Environmental Alliance

Monica Bond, PhD., Wild Nature Institute

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Battle Creek Alliance THP comments (folder on flashdrive)

2008. 2-06-173 Lookout

2008. 2-08-052 Bailey's

2008. 2-08-097 Long Ridge

2009. 2-09-027 Plateau Flat

2010. 2-10-003 Dry Gulch

2010. 2-10-034 Grace

2011. 2-10-067 Blue Ridge

2012. 2-12-026 Reynolds Flat

2012. 2-12-031 Hendrickson-Defiance

2018. 2-17-070 Artemis

2019. 2-18-055 Graceland

2020. 2-19-00180 Rio Gatito

Cal Fire Official Responses and Battle Creek Timber Harvest Plans (this is only partial number of plans submitted and approved) (folder on flashdrive)

2-03-158 TEH Digger

2-04-166 Hazen

2-04-181 Willow Spring

2-06-173 Lookout

2-08-052 Bailey's

2-08-097 Long Ridge

2-09-027 Plateau Flat

2-10-003 Dry Gulch

2-10-034 Grace

2-10-067 Blue Ridge

2-12-026 Reynolds Flat

2-12-031 Hendrickson-Defiance

2-17-070 Artemis

2-18-055 Graceland

2-19-00180 Rio Gatito