



United States
Department of
Agriculture

Chico Plant Introduction Garden Forest Service Site #05-08-60-02

*Section 106 Determination of Eligibility
Report #R2020050800025*



View northward along West Orchard Road (formerly Pistache Avenue), with historic ornamental pistachio trees to the left and modern high-elevation ponderosa pines to the right.



Forest
Service

May 2020

Section 106 Determination of Eligibility Report #R2020050800025

Chico Plant Introduction Garden FS Site #05-08-60-02 Mendocino National Forest

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I. Introduction

Project Overview

This report implements the regulations of § 106 of the National Historic Preservation Act (NHPA; 36 CFR § 800) and documents the evaluation of significance, integrity, and the determination of National Register of Historic Places (NRHP) eligibility for the Chico Plant introduction Garden, today known as the Chico Seed Orchard Administrative Site, formerly also known as the Chico Tree Improvement Center (Forest Service Site #05-08-60-02). The Chico Plant Introduction Garden is located in Chico, CA, and is administered by the Mendocino National Forest. This property and the original Office Building (Laboratory) on this property were previously evaluated in 1991 by Frances Miller and Greg Greenway as part of an office re-roofing undertaking. Miller and Greenway determined that the Office Building (Laboratory) and the property at large were not eligible for listing on the National Register of Historic Places due to a lack of integrity, stating that “while it is clear that CPIG [Chico Plant Introduction Garden] qualifies for listing under 36 CFR 60.4(a) [criterion A], CPIG’s facilities and landscape have been so compromised over the past several decades that CTIC [Chico Tree Improvement Center] no longer adequately conveys the period of significance.” Miller and Greenway went on to state that if not for the lack of integrity, the property would be considered eligible for inclusion on the National Register of Historic Places under Criterion A for its “contributions to the development and introduction of certain agricultural crops during the period of 1904 to 1974,” and that the original Office Building (Laboratory) could be considered a contributing element “inasmuch as the building was an essential component in both genetic research and experimentation and administration of the facility.”¹ Miller and Greenway’s determination of compromised integrity was concurred to by the California State Historic Preservation Officer, Kathryn Gualtieri, on June 5, 1991. A determination of eligibility was also written by Michael Boynton in 1979 for four subsurface precontact burial sites (CA-BUT-296) on the property, which will not be addressed in this report and determination of eligibility.

This report and determination of eligibility asserts that there is a potential historic district within the historic core of the property that retains integrity of location, setting, feeling, and association, and to a lesser degree design, materials, and workmanship. This potential historic district exhibits sufficient historic physical features and characteristics to adequately convey its historic identity and the historic nature of on-site events that have made a significant contribution to the broad patterns of our history [NRHP criterion A]. Some of these extant historic physical features and characteristics also convey a strong association with a significant historic person, Frank N. Meyer, an early and storied plant explorer whose contributions to modern agriculture have revolutionized the suite of what are considered American food crops [NRHP criterion B]. This report and determination of eligibility will expand upon the 1991 effort by

¹ Frances Miller and Greg Greenway, *An Evaluation of National Register of Historic Places’ Eligibility for the Chico Tree Improvement Center and Office Building and an Effect Determination for the Office Building Reroofing Project* (Willows, Ca: USDA Forest Service, Mendocino National Forest, 1991), 1-9.

treating the entire property holistically as a potential historic district composed of contributing and non-contributing features.

The NHPA requires that federal agencies identify and assess the effects of federal undertakings, or federally assisted undertakings, on historic properties and consult with other interested parties to resolve potential adverse effects to these properties. Historic properties protected under the NHPA are those that are listed or eligible for listing in the NRHP. The purpose of this report is to make a Determination of National Register Eligibility (DOE) for properties over 50 years of age within the project's Area of Potential Effect per 36 CFR § 800.4 and over 45 years of age per State of California guidelines.

The Chico Plant Introduction Garden (Forest Service Site #05-08-60-02) is located adjacent to Cramer Lane and Morrow Lane in Chico, California. This horticultural research facility was first established in 1904 under the administration of the University of California and the U.S. Department of Agriculture (USDA). It was the nation's second federally operated plant introduction garden or station, founded for the purpose of engaging in exotic-plant-breeding research and to facilitate the introduction and cultivation of exotic plants into the United States for commercial use.² The Chico Plant Introduction Garden was closed as an Agricultural Research Service (ARS) station in 1973. In 1974, the land was transferred to the USDA Forest Service, was renamed the Chico Tree Improvement Center, later renamed the Chico Genetic Resource and Conservation Center, and then was renamed again the Chico Seed Orchard Administrative Site. 131 acres of the property are today utilized for promoting gene conservation, and for developing and producing source-identified genetically improved plant material for the reforestation program of the Pacific Southwest Region, focusing on the production of ponderosa pine and Douglas-fir seed. Today's Chico Seed Orchard Administrative Site also provides recreational services by way of a nature trail and seven picnic sites.³

The Chico Plant Introduction Garden, today's Chico Seed Orchard Administrative Site, consists of a total of 209 acres of land and associated buildings and infrastructure: 20 buildings and at least 28 above-ground structures, two potable water systems, three non-potable water systems including two industrial-grade wells and extensive irrigation lines, five septic systems, cultivated nursery fields, historic exotic plantings, a nature trail, interpretive signage, seven picnic sites, six access roads, and two parking areas. 79 acres of the land were conveyed for research purposes in 1904, and the original Office Building (Laboratory) and wood-frame residences were under construction as of 1907. An adjoining 130 acres of land was purchased by Congress in 1917. Extensive improvements and construction projects have been ongoing into the 21st century. Historic exotic plantings dating to the property's period of significance (1904-1973) are the common aesthetic theme amongst the historic buildings and structures on site. There is no one architectural theme that binds the buildings, but a combination of multiple architectural themes that are

² W.H. Hodge and C.O. Erlanson, "Federal Plant Introduction: A Review," *Economic Botany* 10, no. 4 (Oct.-Dec. 1956): 318, <https://www.jstor.org/stable/4287909>.

Jones and Stokes Associates, Inc., *Chico Plant Introduction Garden - Butte County, California; Application for California Point of Historical Interest* (Sacramento, CA: Prepared for U.S. Forest Service, Mendocino National Forest, 1995), 3.

³ "About the Forest: Chico Seed Orchard," USDA Forest Service, Mendocino National Forest, accessed May 30, 2019, https://www.fs.usda.gov/detailfull/mendocino/about-forest/?cid=FSBDEV3_004456&width=full.

not readily discernable given the history of alterations and building periods. A number of buildings on site are modern constructions, with aluminum siding and roofing and other 21st-century building materials, dating to after the property's period of significance. Nine buildings and four structures on site date to the property's period of significance, but only eight of those nine buildings and two of those four structures retain sufficient integrity to be considered features that contribute to the historic significance of the property. There are 14 areas on the property in which historic exotic plantings that date to the property's period of significance occur. Eight of these 14 areas have retained sufficient integrity to be considered individually eligible for NRHP listing, as well as contributing features to the potential Chico Plant Introduction Garden Historic District. Three plantings (the Meyer lemon and the mother and father kiwifruit vines) are considered individually eligible for NRHP listing in and of themselves.

Location

The Chico Plant Introduction Garden (Forest Service Site #05-08-60-02) is located at 2741 Cramer Lane in Chico, California, in Butte County, east of California State Highway 99 and south of Skyway Road, approximately 3 miles southeast of downtown Chico. The property is within the Chico, CA, 7.5' Quadrangle at latitude 39°42'24", longitude -121°46'51"; UTM Zone 10N 604505E 4395924N. The current area under review is at an elevation of 230 feet above sea level. See Figure 2: Vicinity Map and Figure 3: Location Map.

Methodology

To develop this DOE, a historian from the USDA Forest Service Enterprise Program utilized original source records, files, maps, surveys, and photographs provided by the Mendocino National Forest Supervisor's Office and by the present-day Chico Seed Orchard Administrative Site, in addition to secondary academic and peer-reviewed literature. Personal communications and information was also provided by Lisa Crane, Field Manager of the present-day Chico Seed Orchard Administrative Site, and by Michael Dugas, Heritage Program Manager of the Mendocino National Forest. Project fieldwork was completed by Daniel O'Toole, Enterprise Historian, from June 24-26, 2019. Fieldwork included photography, geospatial data collection, and a physical examination of the buildings and surrounding landscape. This project's principal investigator meets the Secretary of Interior's Professional Qualifications Standards for Architectural Historian (48 FR 44738-44739).

Summary of Findings

The Chico Plant Introduction Garden (today's Chico Seed Orchard Administrative Site; Forest Service Site #05-08-60-02) is historically significant as a horticultural facility, the research and outputs of which resulted in important contributions to regional and national agricultural industries, and to the sciences of plant biology, crop husbandry, and horticulture.⁴ Many fruits and nuts found in supermarkets today trace their commercial origins to the research, experimentation, and propagation that occurred at this facility. Most notably, 40 years of experimental research in pistachio horticulture at the Chico Plant Introduction Garden resulted in a commercial variety of pistachio, the 'Kerman' cultivar, which in tandem with other climatic and entrepreneurial factors, elevated the United States into the largest producer and distributor

⁴ Jones and Stokes Associates, Inc., *Chico Plant Introduction Garden*, 7.

of pistachio nuts in the world.⁵ Some of the historic exotic plant introductions located on the property are also intimately associated with the significant work of early USDA Plant Explorer Frank N. Meyer. The 30-acre historic core of the property maintains integrity of location, setting, association, feeling, and to an extent, design, workmanship, and materials. The Chico Plant Introduction Garden is associated with the areas of significance of agriculture, commerce, and politics/government. As the following discussion of descriptions, alterations, and historic context demonstrates, the Chico Plant Introduction Garden is historically significant and its historic core retains integrity sufficient to represent its period of significance from 1904 to 1973.

Therefore, *the historic core of the property is eligible for inclusion in the National Register of Historic Places as a historic district under Criterion A and certain historic exotic plantings on the property are individually eligible for inclusion in the National Register of Historic Places under Criteria A and B.*

⁵ Louise Ferguson, "The California Pistachio Industry," *Acta Horticulturae 470: II International Symposium on Pistachios and Almonds* (1997): 39-42, <https://doi.org/10.17660/ActaHortic.1998.470.4>.

"FAOSTAT: Crops," Food and Agriculture Organization of the United Nations, accessed May 20, 2019, <http://www.fao.org/faostat/en/#data/QC>.

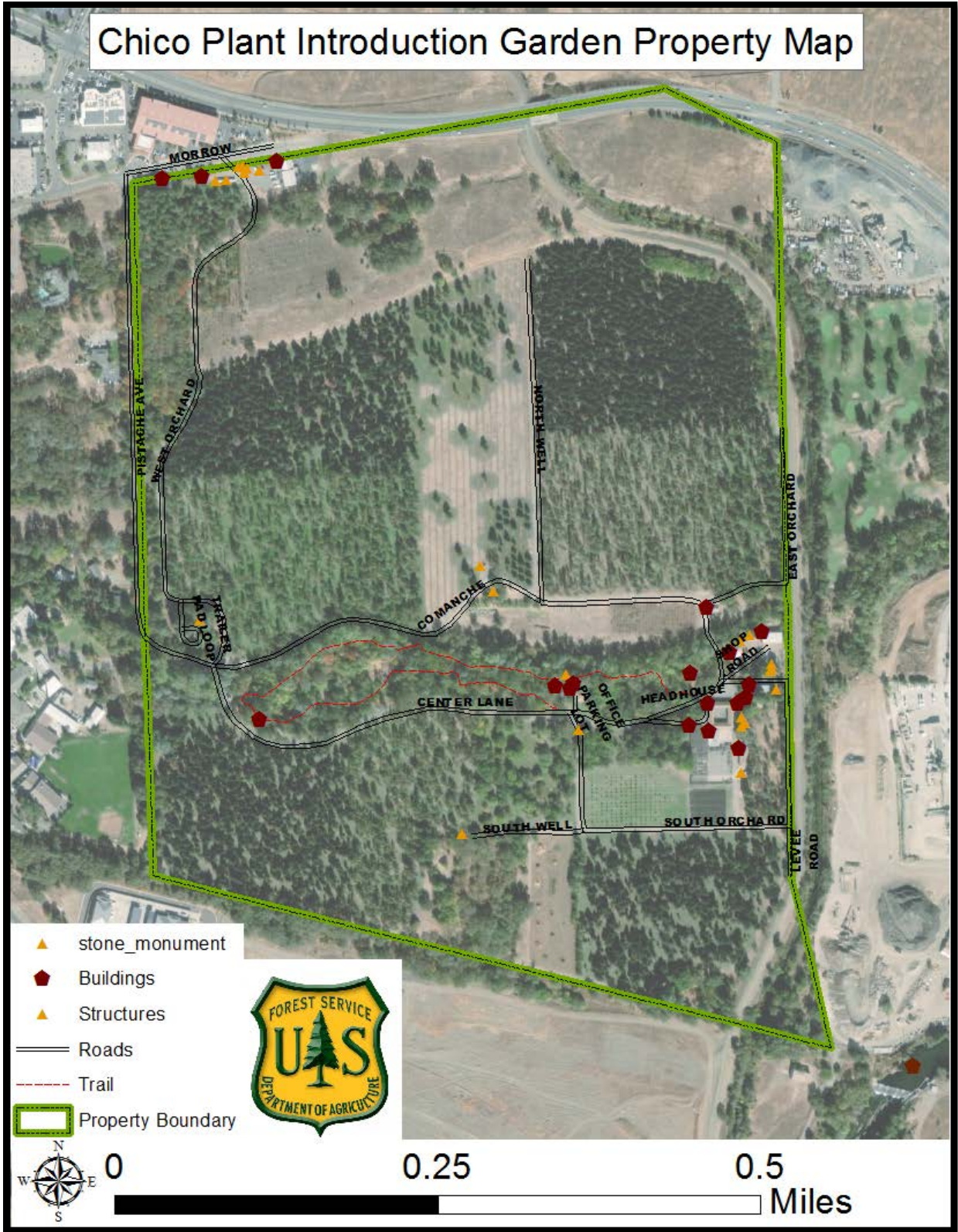


Figure 1: Chico Plant Introduction Garden Property Map

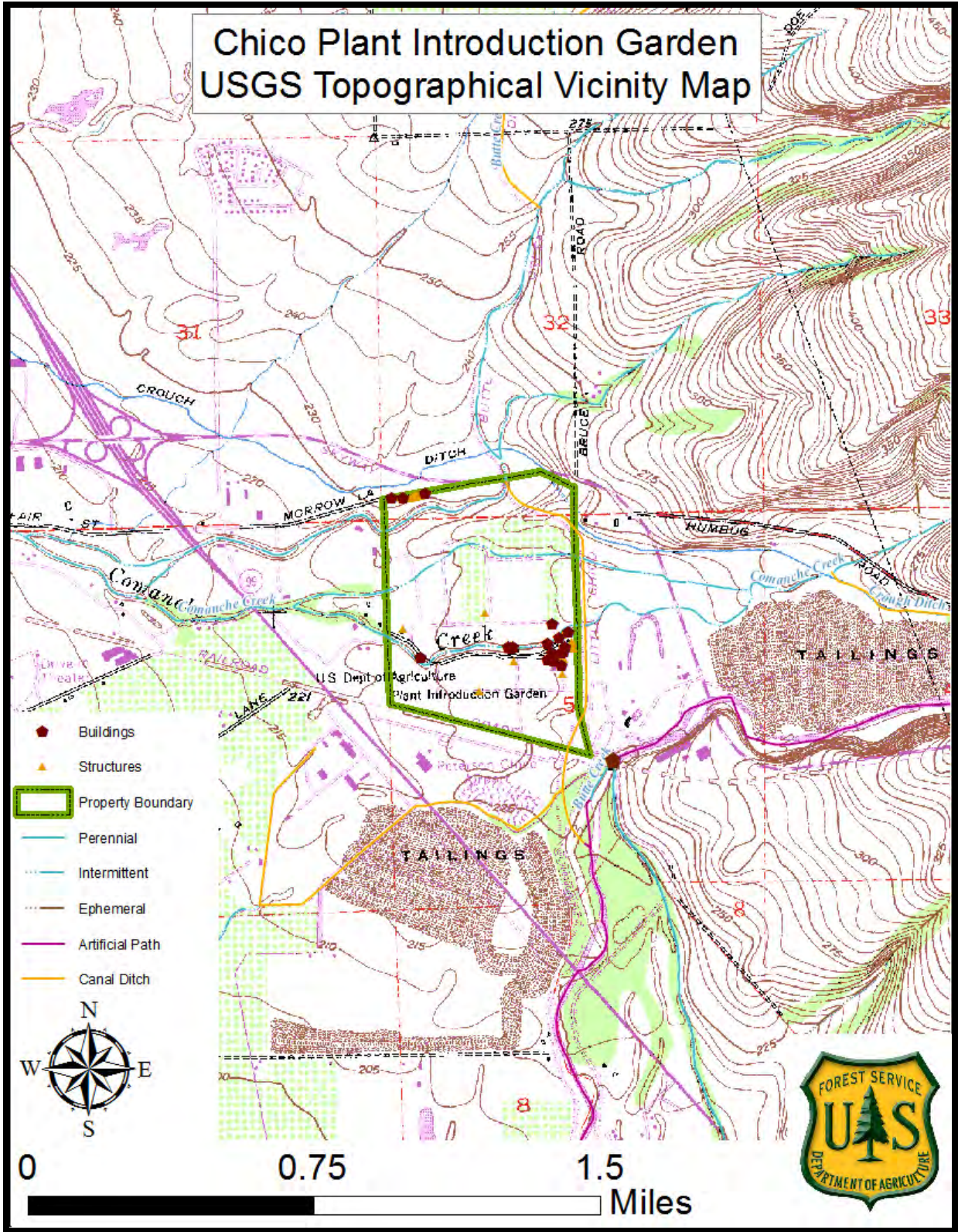


Figure 2: U.S. Geological Survey Topographical Vicinity Map for the Chico Plant Introduction Garden

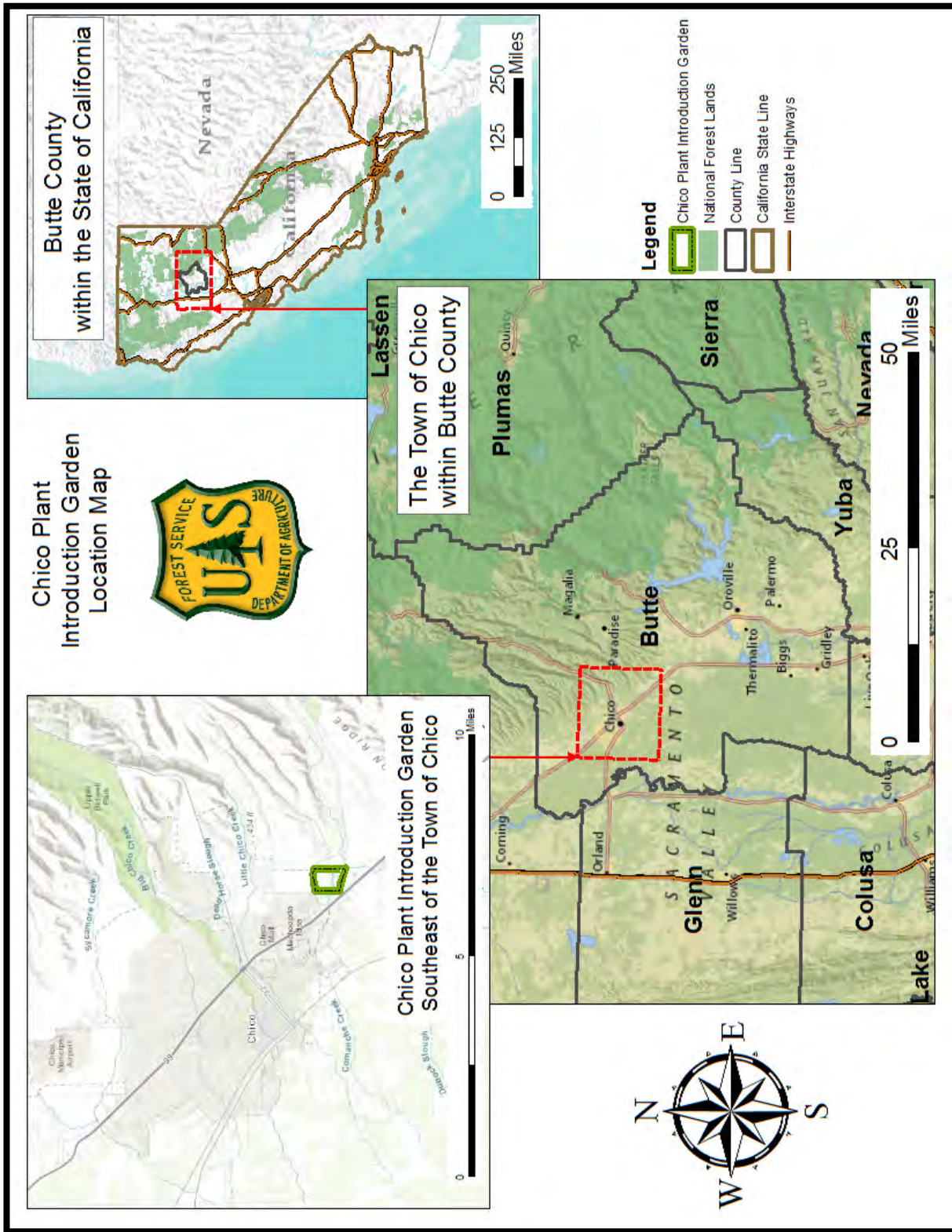


Figure 3: Location Map of the Chico Plant Introduction Garden

II. Historical Context

One of the basic factors that contributes to the U.S. being one of the world leaders in agricultural production is its history of exploration and importation of exotic plants and food crops.⁶ As early as colonial times, exotic plant introductions were recognized by the American colonies and later by the U.S. government as an essential aspect of national food security. In the 19th century, predictions were made that increasing U.S. population growth would outpace our nation's ability to produce sufficient food to avoid widespread famine.⁷ A necessary solution was to systematically import seeds and germplasm, and to grow a wider diversity of plant foods domestically in order to expand and increase the efficiency of the country's agriculturally productive land base.⁸ In the 20th century, the Chico Plant Introduction Garden (today's Chico Seed Orchard Administrative Site), founded for the purpose of facilitating the introduction and cultivation of exotic plants into the United States for commercial use, played a prominent role in the government-administered introduction, propagation, commercialization, and dissemination of exotic food crops into the post-industrial U.S. food system, in particular tree-crop plantations of the Central Valley of California. As technology, research, and regulatory frameworks around plant exploration and introduction have evolved over time, the need for this work has remained steady: to sustain global agriculture now and into the future for the benefit of humankind.⁹

International and National Context:

The U.S. Federal Plant Introduction Program (1776-present)

Prior to a Formalized USDA Program (1776-1897)

Thomas Jefferson, founding father and third president of the United States, is quoted as saying "The greatest service which can be rendered any country is to add a useful plant to its culture." Colonists, immigrants, traders, travelers, merchants, and entrepreneurs had already been practicing this credo through the course of centuries of colonization of the Americas, when Benjamin Franklin set a precedent for U.S. government officials by sending home seeds and cuttings of prospective plants on his foreign diplomatic visits.¹⁰ Included among the plants that Franklin had a hand in establishing in the new world are rhubarb, Scotch kale, dry upland rice, and soybeans. A number of consular and naval officers subsequently followed Franklin's example, spurred on by a Treasury circular of 1819 which exhorted that "the introduction of useful plants, not before cultivated..., is an object of great importance to every civilized state, but more particularly to one recently organized." President John Quincy Adams officially

⁶ Howard L. Hyland, "History of U.S. Plant Introduction," *Environmental Review: ER* 2, no. 4 (1977): 26. doi:10.2307/3984262. 26.

⁷ J. Kim Kaplan, "Conserving the World's Plants," *Agricultural Research* 46, no. 9 (September 1998): 4.

⁸ Nelson Klose, *America's Crop Heritage: The History of Foreign Plant Introduction by the Federal Government* (Ames: Iowa State College Press, 1950), 109-111.

⁹ Karen A. Williams, "An Overview of the U.S. National Plant Germplasm System's Exploration Program," *HortScience* 40, no. 2 (April 2005): 301.

¹⁰ W.H. Hodge and C.O. Erlanson, "Plant Introduction as a Federal Service to Agriculture," in *Advances in Agronomy* 7, ed. A.G. Norman (New York: Academic Press Inc., 1955): 190; Hyland, "History," 27.

recognized the practice in 1827, when he made the request of U.S. consular officers abroad to send rare seeds and plants back to Washington, D.C. to be placed in the government’s botanic garden.¹¹

The origins of a government-sponsored system for the dissemination of introduced seeds can be traced back to the U.S. Commissioner of Patents, Henry L. Ellsworth, who in 1836 began sending seeds to American farmers and who in 1839 was appropriated \$1,000 to continue the practice.¹² 1847 saw the first congressional appropriation for experimentation to establish potential new crops, and 1858 saw the first government-administered exploratory mission abroad for the specific purpose of collecting and returning seeds and botanical specimens, in this case of Chinese tea (limited plant exploration had previously been conducted as a secondary purpose of naval missions).¹³ The Lincoln administration formally established the U.S. Department of Agriculture through the Organic Act of 1862, directing the newly appointed commissioner to, among other duties, “collect, as he may be able, new and valuable seeds and plants; to test, by cultivation, the value of such of them as may require such tests; to propagate such as may be worthy of propagation, and to distribute them among agriculturists.”¹⁴

Establishing a Framework for Federal Plant Introductions (1898-1930)

1898 saw the U.S. Department of Agriculture attain cabinet status with the appointment of the first Secretary of Agriculture, James Wilson.¹⁵ This resulted in larger appropriations for agriculture, and also initiated a formalized program for exotic plant introduction, organized under the USDA’s newly formed Section of Seed and Plant Introduction, a working group under the Bureau of Plant Industry whose name would change often through the course of the 20th century.¹⁶ The primary purposes of this group have evolved over time, but have been for the most part devoted to the exploration, introduction, and dissemination of exotic seeds and plants with the potential to increase the value and/or variety of the nation’s agricultural resources.¹⁷ Exploratory expeditions for exotic plants began in 1898 at the onset of this group’s work, spurring on the professional establishment of a number of subsequently well-known ‘plant explorers,’ including Frank N. Meyer and Wilson Popenoe, among others.¹⁸ The period between 1898 and 1930 was one of extremely active exotic plant exploration, contributing significantly to domestic crop improvement, crop diversity, and commercial agricultural production. Concurrently, a system of plant introduction, or accession, number assignments was initiated in 1898 to be published in periodic plant inventories, a system that produced 655,520 entries by the year 2008.¹⁹ Given that those introductions most likely to succeed in the United States would come from areas with similar agro-climates, most of the early explorations concentrated in temperate parts of the globe, namely Russia and

¹¹ Klose, *America’s Crop Heritage*, 141-142

¹² Hodge & Erlanson, “Federal Plant Introduction,” 301. Hyland, “History,” 27.

¹³ Hyland, “History,” 27. Klose, *America’s Crop Heritage*, 27-28.

¹⁴ U.S. Congress, “An Act to Establish a Department of Agriculture,” *Thirty-seventh Congress II*, ch. 72 (May 15, 1862): 388.

¹⁵ Hyland, “History,” 28.

¹⁶ Hodge & Erlanson, “Federal Plant Introduction,” 301. Hyland, “History,” 28.

¹⁷ Hodge & Erlanson, “Federal Plant Introduction,” 302.

¹⁸ Kaplan, “Conserving,” 4. Hodge & Erlanson, “Federal Plant Introduction,” 306-307.

¹⁹ Hyland, “History,” 28; “Plant Inventory No. 217: Plant Materials Introduced in 2008 (Nos. 652416 – 655520),” USDA Agricultural Research Service, accessed October 30, 2019, https://www.ars-grin.gov/npgs/pi_books/scans/pi217.pdf: 1.

China.²⁰ Early notable plant introductions in this period, some of which revolutionized the agriculture of large parts of the U.S., include varieties of soybean, crested wheatgrass, rice, avocado, navel oranges, date palm, hybrid azaleas, bamboo, olives, walnuts, cotton, and pistachio.²¹ An early notable figure of federal exotic plant introduction is David Fairchild, who helped to organize the original Section of Seed and Plant Introduction into the Agricultural Research Service of the USDA, served as an agricultural explorer from 1898-1903, and served as the administrator in charge of the Section from 1903-1928.²²



Figure 4: Palemon Howard (P.H.) Dorsett (left), the first administrator in charge of the Chico Plant Introduction Garden, and David Fairchild (seated), administrator in charge of the USDA Section of Plant and Seed Introduction from 1903-1928, from Klose, America's Crop Heritage, i.

The federal plant introduction gardens, where exotic seeds and plants were introduced, tested, and in some instances naturalized to various climatic regimes of the U.S., formed an essential component of the systematic federal plant introduction program at large. Without domestic quarantine and growing facilities, the pursuit of plant exploration would have been purely an exercise in exploration, without domestic application. The first federal plant introduction garden was established in 1898, a rented six-acre tract in what is today downtown Miami, Florida. The Chico Plant Introduction Garden was the second of its kind, established in 1904. Due to political challenges of the time that made it difficult for the federal government to outright purchase land for its own use, the “progressive citizens” of Chico collectively contributed funds to purchase 79 acres of land on the outskirts of the town, which they then donated to

²⁰ Hyland, “History,” 31.

²¹ Hodge & Erlanson, “Plant Introduction as a Federal Service,” 202. Hyland, “History,” 30. Kaplan, “Conserving,” 8.

²² Hodge & Erlanson, “Federal Plant Introduction,” 304.

the federal government for use as a plant introduction garden.²³ USDA Horticulturist Howard Dorsett, pictured above, was installed as the administrator in charge of the federal plant introduction gardens in 1910, and was instrumental in increasing the size of existing gardens and the number of federal gardens in use.²⁴ The third and fourth of the original federal plant introduction gardens were established in 1919, one in Glenn Dale, Maryland, and one in Savannah, Georgia. The Miami garden soon outgrew its bounds and was relocated to Coconut Grove, Florida, in 1922.²⁵

While new exotic crop introductions were the initial mainstay of the federal plant introduction gardens, as early as 1913 additional focus was being placed on hybridization, selective breeding, cultivation methods, and disease control. During the 1920s, this shift from new crop introductions to improving traits of existing crops became more pronounced. Diverse genetic material of barley, alfalfa, sugar cane, and potatoes became the target of explorations, especially varieties resistant to insects, disease, and climatic conditions.²⁶ Some of these introductions have served an understated, but significant role in U.S. agriculture, such as the wild currant tomato of Peru and Ecuador that was found to carry disease resistance traits which have been bred into several commercial tomato varieties.²⁷ Grass and forage varieties became sought after for range projects at this time, as well as natural insecticides derived from plants that could replace the lead and arsenic compounds that were waning in efficacy. In the 1930s, USDA's Bureau of Plant Industry also became interested in ornamental plants, which began to fill rows of the federal plant introduction gardens.²⁸

Distribution of useful crops was also considered an essential aspect of the work of the federal plant introduction gardens. Congress doubled its appropriation for plant introduction work in 1905, in large part to support this objective. The Chico garden alone distributed more than 5,000 plants in 1909. 40,000 plants were distributed in 1912, followed by a congressional appropriation in 1913 that promoted wide distribution of agricultural crops such as alfalfa, millet, soybeans, and cotton, among other introduced plants. 1927 proved an especially productive year, with approximately 370,000 plants, roots, seeds, cuttings, and bulbs distributed domestically and approximately 7,000 specimens distributed to foreign collaborators.²⁹ International collaboration remains an integral component of the U.S. National Plant Germplasm System today.

The federal plant introduction gardens were not without precedent in the form of experimental private collections, botanical gardens, arboreta, and herbaria. The federal plant introduction gardens differed from the other categories, however, in that their emphasis was not on personal interest, opportunism, aesthetics, or recreation, but rather on the development and distribution of plants with present or potential economic, commercial, or industrial value to the nation. As a result, the grounds often lacked landscaping characteristics common of other kinds of gardens, and collections were seldom permanent and rarely long-term. Once tested for climatic suitability, plant introductions that proved to be of no economic value were discarded. If a climatically suitable plant introduction was found to be of potential

²³ W.H. Hodge et al., "Federal Plant Introduction Gardens," *National Horticultural Magazine* 35 (April 1956): 86.

²⁴ Klose, *America's Crop Heritage*, 121.

²⁵ Hodge, "Federal Plant Introduction Gardens," 86.

²⁶ Klose, *America's Crop Heritage*, 123-124.

²⁷ Hodge & Erlanson, "Plant Introduction as a Federal Service," 191.

²⁸ Klose, *America's Crop Heritage*, 124.

²⁹ Klose, *America's Crop Heritage*, 124-125.

economic value, then it would be propagated and subsequently distributed to appropriate climatic zones. At times propagation could take decades, especially in the case of woody species. At other times, it could be necessary to undertake years of research on propagation methods and the best use of horticultural practices for commercial application. But in the end, once widely established outside of a plant introduction garden, it would no longer be necessary to maintain a given plant within a garden itself, and space would be made for additional introductions. At any one time, any of the federal plant introduction gardens were likely to contain several thousands of introduced plants in various stages of testing, propagation, research, and distribution.³⁰



Figure 5: View of the fields of the Chico Plant Introduction Garden, 1913, photograph courtesy of Barbara R. Wilson and the Meriam Library Special Collections of California State University, Chico.

Dust Bowl and World War II Era (1931-1945)

“During World War II, things pretty much came to a stop.”³¹ This period is largely characterized by a contraction in the scale of exotic plant explorations and introductions as a result of funds being redirected away from the USDA, as well as organizational changes that took place within the U.S. government in general. The effects of the Dust Bowl in Midwestern states in the 1930s precipitated the use of domesticated and naturalized tree and plant species in support of the national programs of the newly formed Soil Conservation Service.³² The shelterbelt program of the 1930s introduced Chinese elms and tamarisk, or salt cedar, trees from the Asian steppe to the Great Plains.³³ They were planted by the millions in order to reduce aeolian soil erosion and to moderate climatic conditions, an effort that was swiftly

³⁰ Hodge, “Federal Plant Introduction Gardens,” 87-88.

³¹ Lloyd Joley, “Interview with Lloyd Joley Conducted at the Chico Tree Improvement Center,” interview by Holly Rodgers and Jack Kennedy (intermittently present), February 12, 1981: 22.

³² Hyland, “History,” 30.

³³ Kirk Johnson, “War with Riverbank Invader, Waged by Muscle and Munching,” *The New York Times*, December 26, 2008, <https://www.nytimes.com/2008/12/27/us/27tamarisk.html>.

regretted by the scientific community as the tree became an uncontrolled invasive in riparian areas throughout the American West within the course of years.³⁴

Tung oil, a plant-based product used for coating, finishing, and as an additive to paint, was declared a strategic item in 1941 for defense and war efforts. Tung oil is derived from the tung tree, native to south China and southeast Asia, seeds of which were first brought into the U.S. by David Fairchild in 1905 and propagated at the Chico Plant Introduction Garden. Seedlings were distributed to growers throughout the southern U.S., and were well established by 1927. This domestically produced crop became considerably more significant, and profitable, as a result of an embargo on Chinese tung oil after the U.S. entry into World War II.³⁵

During the war years of 1941-1945, plant accessions were obtained primarily through correspondence and foreign donors, as opposed to active expeditions.³⁶ In fact, 1942-1945 mark the only years since the inception of USDA's plant exploration program in 1898 that no exotic plant exploration expeditions were conducted.³⁷ Once Japanese forces began to attack and subsequently occupy areas with plantations of significant tropical crops in the Philippines (at that point still a protectorate of the United States), a new program of self-sufficiency in the Americas was initiated. From seed flown in from the Philippines, approximately four million cinchona trees, a natural source of quinine, were raised at the plant introduction garden in Glenn Dale, Maryland, and later distributed to locations in Latin America for the establishment of new plantations. Interestingly, the cinchona tree's place of origin is tropical forests of Andean South America, from which it had been introduced to Southeast Asia for cultivation in the 19th century.³⁸

Cooperative Program between USDA and States (1946-1969)

In the first half of the 20th century, the federal plant introduction gardens provided venues for the evaluation, propagation, and distribution of new crops, but not for their long-term maintenance and preservation. At the close of World War II, there lacked a nationally coordinated system to conserve collections and introduced germplasm, and to identify gaps in collections in order to steer plant explorations in a cohesive and strategic manner.³⁹ Advances in communications following World War II, as well as a number of other factors including the advent of international meetings and technical assistance programs, effected a number of significant changes to the federal system of exotic plant introduction.⁴⁰ Around the same time, the National Research Council issued a study in 1943 that

³⁴ Matthew K. Chew, "The Monstering of Tamarisk: How Scientists Made a Plant into a Problem," *Journal of the History of Biology* 42 (2009): 233-240, DOI: 10.1007/s10739-009-9181-4. https://www.academia.edu/195358/The_Monstering_of_Tamarisk_How_Scientists_made_a_Plant_into_a_Problem.

³⁵ Karen Brown and William Keeler, "The History of Tung Oil," *Wildland Weeds* 9, no. 1 (Winter 2005): 4-5.

³⁶ Hyland, "History," 30.

³⁷ Williams, "An Overview," 297.

³⁸ Klose, *America's Crop Heritage*, 136-137.

³⁹ Williams, "An Overview," 297.

⁴⁰ Hyland, "History," 30.

highlighted the need for greater regional organization around plant conservation.⁴¹ This spurred on the Research and Marketing Act of 1946, which provided annual funds to establish a federal-state cooperative program to continue the exploration, introduction, and testing of exotic plants as food crops and for industrial uses in a cohesive cross-boundary fashion that would catalog existing genetic stocks and preserve them for future breeding programs.⁴² Out of these efforts were established the Interregional Potato Introduction Station in Sturgeon Bay, Wisconsin (1949), as well as regional plant introduction stations (an updated moniker) in Ames, Iowa (1947), Geneva, New York (1948), Experiment, Georgia (1949), , and Pullman, Washington (1952).⁴³ ⁴⁴ This new division of labor allowed for the Agricultural Research Service of the USDA to oversee exotic plant exploration, quarantine, and introduction, while states and other cooperating agencies were given the role of testing, evaluating, and disseminating. Every state (and Puerto Rico, Hawaii, and Alaska) now had opportunity and funding to establish its own agricultural experiment station and to cooperate with the Agricultural Research Service of the USDA to coordinate new crop and plant introductions.⁴⁵

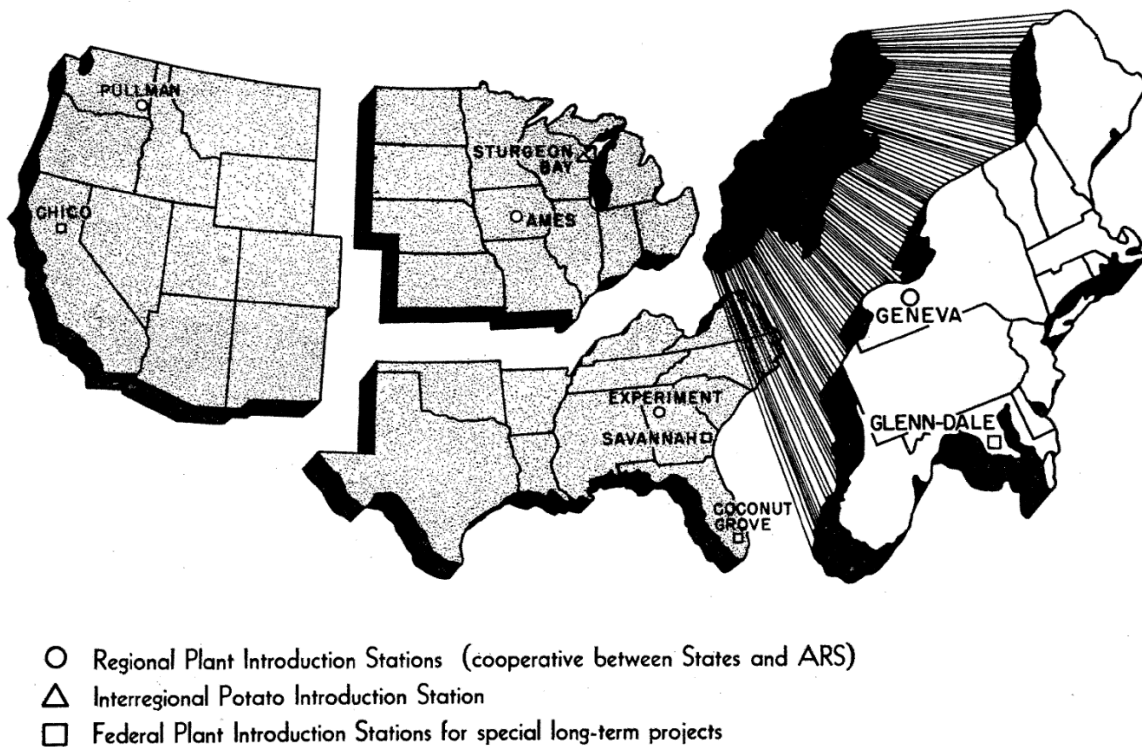


Figure 6: Locations of the government-sponsored plant introduction infrastructure of the U.S. as of 1956, from Hodge & Erlanson, "Federal Plant Introduction," 318.

⁴¹ G.A. White, H.L. Shands, and G.R. Lovell, "History and Operation of the National Plant Germplasm System," in *Plant Breeding Reviews Volume 7: The National Plant Germplasm System of the United States*, ed. Jules Janick (Portland, OR: Timber Press, 1989), 6-7.

⁴² Klose, *America's Crop Heritage*, 137-138.

⁴³ Hodge & Erlanson, "Federal Plant Introduction," 327.

⁴⁴ Hyland, "History," 31.

⁴⁵ Hodge & Erlanson, "Plant Introduction as a Federal Service," 205-206.

Up until 1946, funds for plant exploration expeditions had in every case been dependent on special legislation or the aid of benefactors. This too changed through the Research and Marketing Act of 1946, which created official channels through which to request support on an annual basis.⁴⁶ Crop researchers within the U.S. also had increasingly sophisticated requests for genetic resources specific to their programs and objectives. From 1948-1976, 73 foreign expeditions were conducted, resulting in approximately 250,000 accessions added to the inventory.⁴⁷ This era also saw recognition of the importance of native germplasm acquired through domestic explorations.⁴⁸ Of particular significance in this era of research are the integration of different collections into one national collection of small grains, the preservation of imperiled bean germplasm of Latin America, and the accession of dryland forage species, medicinal plants, and new fiber and oilseed crops.⁴⁹

Another major outcome of the Research and Marketing Act of 1946 was the formalization of a program to ensure the preservation of introduced germplasm, i.e. living genetic material such as seeds, cuttings, or other tissue that is maintained for the purpose of plant breeding, preservation, or research. As of 1946, only 5 to 10% of the recorded 160,000 accessions could be accounted for in existing collections.⁵⁰ These losses were representative of decades of painstaking collection, and were in large part irreplaceable. Of the variety of factors contributing to this situation, chief among them was the USDA's lack of centralized storage facilities for the long-term maintenance and preservation of germplasm, since the original plant introduction gardens were not designed with this purpose in mind. As a result of interagency reporting requirements and storage facilities at each of the four new regional plant introduction stations, the new division of labor afforded greater accountability in the preservation of new and existing accessions. The Interregional Potato Introduction Station quickly became a national center for research and experimentation on potatoes and related tuber-bearing species.⁵¹ It today hosts the United States Potato Genebank, an important global resource of wild and cultivated potato germplasm for research and application of proven and potential disease resistances and other important agronomic traits present within its collection.⁵² The National Small Grains Collection was officially organized in 1948 under the USDA's Agricultural Research Service at the Beltsville Agricultural Research Center in Beltsville, Maryland, though its antecedents and some of its accessions date back to the 19th century.⁵³ It was relocated to Aberdeen, Idaho, in 1989, and is today one of the largest collections of its kind in the world.⁵⁴ 1958 witnessed the opening of a National Seed Storage Laboratory in Fort Collins, CO, with the responsibility for secure long-term storage, preservation, and monitoring of all manner and forms of plant germplasm.⁵⁵ Equipped with multiple layers of temperature and humidity controls, this facility serves as back-up storage

⁴⁶ Hodge & Erlanson, "Plant Introduction as a Federal Service," 206.

⁴⁷ Hyland, "History," 31.

⁴⁸ Williams, "An Overview," 297.

⁴⁹ Hyland, "History," 31.

⁵⁰ Ibid.

⁵¹ White et al., "History and Operation," 12. Hyland, "History," 31.

⁵² John B. Bamberg and David M. Spooner, "The United States Potato Introduction Station Herbarium," *Taxon* 43, no. 3 (August 1994), 489-490, <https://www.jstor.org/stable/1222738>.

⁵³ White et al., "History and Operation," 14.

⁵⁴ National Research Council, *The U.S. National Plant Germplasm System* (Washington D.C.: The National Academies Press, 1991), 58.

⁵⁵ Hyland, "History," 31.

of regional collections and can accommodate a wide range and high volume of seeds and germplasm.⁵⁶ It also conducts research on methodologies and best practices for seed and germplasm preservation.⁵⁷

Modern U.S. National Plant Germplasm System (1970-present)

A southern corn blight epidemic in 1970 incited the agricultural community at large to take a hard look at the cause of increasing crop genetic diversity. A National Academy of Sciences report from 1972 on the genetic vulnerability of the nation's crops recommended the establishment of a National Board for Plant Genetic Resources in order to advise the Secretary of Agriculture on issues and policies around crop health and preservation of plant germplasm.⁵⁸ This same report highlighted the urgency of conserving what came to be termed 'biological diversity,' or biodiversity.⁵⁹ Spurred on by this report and as a result of federal, state, and private collaboration across sectors, the National Plant Germplasm System emerged in the 1970s as a network of people and institutions with responsibility for the management and preservation of germplasm with significance to U.S. and global agriculture.⁶⁰ Its stated mission is to provide "the genetic diversity necessary to improve crop productivity and to reduce genetic vulnerability in future food and agriculture development, not only in the United States but for the entire world."⁶¹ The National Plant Genetic Resources Board was formalized in 1978, followed by the National Plant Germplasm Committee who coordinates research, recommends policies, and fosters international cooperative initiatives.⁶² Among the byproducts of these collaborations have been the consolidations of various collections, coordination across sectors of seed and plant exploration and exchanges, updates to quarantine standards, and the formation and coordination of crop advisory committees.⁶³

A 1981 report on the National Plant Germplasm System identified the need for a link between the scientific and advisory components of the National Plant Germplasm System and the community of users of that science. The result was the formation of the crop advisory committees to provide guidelines for germplasm exploration, acquisition, and distribution of specific crops.⁶⁴ Today 40 crop advisory committees, composed of scientists and crop experts, counsel the National Plant Germplasm System on collection gaps, research needs, and recommended plant explorations and acquisitions. About 15 exotic and domestic plant explorations are still conducted annually, now with the primary focus not on new crops, but on the targeting of specific taxa and traits that could potentially be incorporated into existing crops as genetic improvements to evolving factors. Examples of these traits would include pest or fungal resistance or climatic variations that do not occur in existing collections, as well as the preservation of germplasm that is considered at risk of extinction and that could prove useful for future research. In addition, 27 active collection sites of the National Plant Germplasm System operate across the country in

⁵⁶ White et al., "History and Operation," 13-14.

⁵⁷ Williams, "An Overview," 297.

⁵⁸ White et al., "History and Operation," 7.

⁵⁹ National Research Council, *Expansion of the U.S. National Seed Storage Laboratory: Program and Design Considerations* (Washington, D.C.: The National Academies Press, 1988): vi. <https://doi.org/10.17226/19126>.

⁶⁰ Williams, "An Overview," 297.

⁶¹ White et al., "History and Operation," 18-19.

⁶² D.M. Wesenberg, L.W. Briggie, and D.H. Smith, "Germplasm Collection, Preservation, and Utilization," in *Oat Science and Technology*, eds. H.G. Marshall and M.E. Sorrells (Madison, WI: American Society of Agronomy, Inc., 1992), 797.

⁶³ White et al., "History and Operation," 19.

⁶⁴ Wesenberg et al., "Germplasm," 797.

order to manage acquisition, maintenance, evaluation, propagation, distribution, and research on seed and genetic stock collections (see Figure 7). The National Plant Germplasm System is one of the largest plant germplasm distributors in the world, in large part owing to the USDA's policy of free and unrestricted exchange of germplasm for purposes of research, breeding, and education.⁶⁵



Figure 7: Locations of the modern U.S. National Plant Germplasm System as of 1989, from White, "History and Operation," 19.

An additional essential modernization to emerge from this era was the consolidation and increased sophistication of a national database to track accessions and collection inventories. The first step toward this end occurred in 1976 in the form of a feasibility study that displayed the fragmented nature of the systems then in place. Following this study, the Germplasm Resources Information Project was initiated in order to create unified digital database from which information could be readily retrieved and which would meet the needs of users, committees, and all components of the National Plant Germplasm System. The Agricultural Research Service of the USDA assumed responsibility for the database in 1983, and renamed it the Germplasm Resources Information Network, or GRIN. It today houses all manner of information on the collections and accessions of the National Plant Germplasm System, including taxonomy, descriptions, observations, evaluations, inventory data, passport data, test results, and geographic information.⁶⁶ Efforts are currently underway to expand this database on an international level and to develop a global genebank information system.⁶⁷

This period in the history of plant exploration and introduction has also seen a marked shift in the ethical code of conduct around genetic plant resources. The 1973 Convention on International Trade in

⁶⁵ Williams, "An Overview," 297-298.

⁶⁶ White et al., "History and Operation," 28. Williams, "An Overview," 297.

⁶⁷ "International Project to Develop a Global Plant Genebank and Information Management System," United States Department of Agriculture, accessed October 31, 2019, (April 2013), https://cropgenebank.sgrp.cgiar.org/images/file/learning_space/korea_workshop/lecture3and4/gg_handout.pdf.

Endangered Species of Wild Fauna and Flora ensured that collectors could not endanger the continued existence of wild populations of the species that they were targeting. The Convention on Biological Diversity was signed by government leaders at the 1992 Rio Earth Summit, and formally became international law in 1993.⁶⁸ This international treaty was accompanied by the United Nations Food and Agriculture Organization’s International Code of Conduct for Plant Germplasm Collecting and Transfer, a now widely accepted set of norms for the industry.⁶⁹ Up until this time, plant genetic resources had been considered the common heritage of all humankind, and free and open access had prevailed as the global norm for germplasm exploration and exchange. The Convention on Biological Diversity, however, recognized the sovereign rights of nations over their indigenous genetic resources. Among other conditions of the Convention are the prior informed consent of host countries and the fair and equitable sharing of benefits derived from use or commercialization of genetic resources on mutually agreed terms. Since the Convention, laws have been implemented in a number of donor countries that replace previously free and open access and formalize national sovereignty over indigenous genetic resources.⁷⁰ Some donor countries have even declined permissions for explorations, citing a historic lack in equitable benefit-sharing.⁷¹ The United States is one of four nations worldwide that is not a party to the Convention, though the U.S. government does recognize it as an instrumental international framework and still sends representative observers to its conferences of parties. The National Plant Germplasm System has responded to evolving regulatory environments with a flexible approach that includes nonmonetary benefit-sharing and more robust partnerships in an increasingly globalized world.⁷²

Regional and Local Context

Pragmatic Conservation and Plant Introduction in California

Following the establishment of the U.S. Department of Agriculture in 1862, the federal government initiated a policy of improving agriculture and horticulture in the United States, including the establishment of land grant colleges. The Hatch Act of 1887 allowed for the establishment of farms on land grant colleges and universities for the purposes of agricultural research and experimentation. The University of California, and its Director of the Agricultural Experiment Stations of the School of Agriculture, Eugene Woldemar (E.W.) Hilgard, were willing and able to take advantage of these congressional allowances, establishing plant experimentation stations around the state.⁷³ These plant experimentation stations were established both for horticultural and agricultural purposes, but also for research into domestic species that could be used in forestry and watershed restoration efforts.

At the same time, the 1880s in California brought into full swing the ‘pragmatic’ conservation movement of foresters such as Abbot Kinney and Theodore P. Lukens, who espoused the development of forests for

⁶⁸ Williams, “An Overview,” 299.

⁶⁹ Food and Agriculture Organization of the United Nations, “Appendix E: International Code of Conduct for Plant Germplasm Collecting and Transfer,” accessed October 31, 2019, <http://www.fao.org/3/x5586E/x5586e0k.htm>.

⁷⁰ Williams, “An Overview,” 299.

⁷¹ Kaplan, “Conserving,” 7.

⁷² Williams, “An Overview,” 300.

⁷³ Marlea A. Graham, “Plant Introduction Garden at Chico,” *Eden: Journal of the California Garden & Landscape History Society* 20, no. 1 (Winter 2017): 14.

economic and societal benefit, a concept which included tree plantations.⁷⁴ In 1887, the California State Board of Forestry adopted a resolution to establish experimental tree plantations throughout the state for the purpose of determining what species of trees could be successfully introduced via reforestation efforts into the several climatic regions of the state.⁷⁵ A secondary purpose was that the plantations would also serve as arboreta for local recreation. This resolution, though, was dependent on land being made available by private citizens, or through other means.⁷⁶ In 1888, John Bidwell, the founder of Chico, California, granted approximately 29 acres of land on Chico Creek for use as a woody plant nursery and demonstration plantation.⁷⁷ Though maintenance funds were scarce to nil, California Forester Ernest Sterling was quoted in 1905 as stating that “these forest experiment stations were the first... of the kind ever established in the United States.”⁷⁸ The California State Board of Forestry was disbanded in 1893 and the land was transferred to the University of California’s School of Agriculture as one of their plant experimentation stations. The University of California then sold the land in 1921 to the state of California who in turn sold to the City of Chico, which incorporated it into today’s Lower Bidwell Park.⁷⁹

John Bidwell was a man of many interests, perhaps chief among which was agriculture. He was known for championing new methods of modern agriculture and for the diversity of crops which he tended on his lands, known as Rancho Chico, along the banks of Big Chico Creek. Mining and raising livestock were the primary industries in mid-19th-century Chico, and Bidwell engaged in those pursuits, but augmented them as well with experimental orchards and exotic plantings, flourmills, fruit-drying operations, and other agricultural ventures.⁸⁰ Some of his experiment plantings included Egyptian corn, Peruvian potatoes, Japanese mountain rice, Australian wheat, Turkish casaba melons, and the silk tree, or pink mimosa.⁸¹ He also cultivated some 400 varieties of fruit trees on his ranch including fig, peach, apple, quince, pear, and grape. Bidwell’s was the first ranch to produce commercially viable grapes in California and he was among the pioneers of olive oil production in the American West. In 1850, there were approximately 250 peach trees in Butte County, CA; by 1863, there were 150,000, owing in large part to Bidwell’s example. Chico’s first almond ranch was planted in 1875 and a fruit cannery was built in town in the 1880s, further solidifying the place of fruit and nut trees in the local economy.⁸² Bidwell’s successful introduction of the casaba melon, a relative of the old world muskmelon, even attracted the attention of USDA administrator David Fairchild, who would build upon Bidwell’s example with the establishment of the Chico Plant

⁷⁴ Anthony Godfrey, *The Ever-changing View: A History of the National Forests in California* (Vallejo, CA: USDA Forest Service, Pacific Southwest Region, 2005), 34-36.

⁷⁵ C. Raymond Clar, *California Government and Forestry from Spanish Days until the Creation of the Department of Natural Resources in 1927* (Sacramento, CA: State of California Department of Natural Resources, Division of Forestry, 1959), 112; Godfrey, *The Ever-changing View*, 35.

⁷⁶ Clar, *California Government and Forestry*, 112-113.

⁷⁷ Clar, *California Government and Forestry*, 112-113; Wes Dempsey, “Chico’s Lost Arboretum,” Friends of Bidwell Park, Accessed December 9, 2019, <http://friendsofbidwellpark.org/park-info/environment-wildlife/chicos-lost-arboretum/>.

⁷⁸ Clar, *California Government and Forestry*, 113.

⁷⁹ Clar, *California Government and Forestry*, 325-515.

⁸⁰ Debra Moon, *Chico: Life and Times of a City of Fortune* (Charleston, SC, Chicago, IL, Portsmouth, NH, San Francisco, CA: Arcadia Publishing, 2003), 32-36.

⁸¹ Jones and Stokes Associates, Inc., *Chico Plant Introduction Garden*, 4; Graham, “Plant Introduction Garden at Chico,” 14.

⁸² Moon, *Chico*, 33-37.

Introduction Garden four years after Bidwell's death (see 'History of the Chico ' section below).⁸³ By the time of the Chico Plant Introduction Garden's establishment and early growth from 1904 to 1920, Chico had become an important shipping location for dried and fresh fruits including prunes, peaches, olives, figs, and plums.⁸⁴ These early efforts in plant experimentation and naturalization made Chico a proven location for fruit and nut tree cultivation, for exotic introductions, and for domestic forestry plantations.

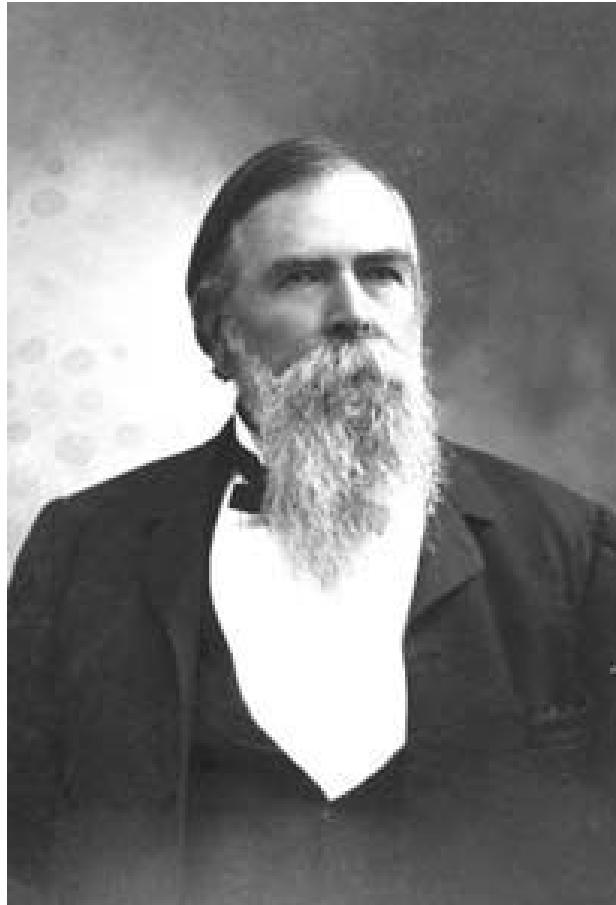


Figure 8: John Bidwell, founder of Chico, among other endeavors, from Costar, "Chico, Butte County," 569.

Genetic Resource Conservation in the Pacific Southwest Region of the USDA Forest Service

As early as 1908, the recently organized USDA Forest Service was establishing a tree nursery on the Shasta National Forest in California in order to investigate "exactly what class of trees furnish the most and best seed."⁸⁵ Forest genetics and disease research in California was initiated in earnest with the founding of the Eddy Tree Breeding Institute by lumberman James G. Eddy in 1925 in Placerville, California. At first, this institute employed traditional tree-breeding practices to produce high-quality specimens of 49 species

⁸³ David Fairchild, *The World was my Garden: Travels of a Plant Explorer* (New York, NY: C. Scribner's Sons, Ltd., 1938), 301.

⁸⁴ Frances Miller, *History of Forest Service Chico Tree Improvement Center* (Willows, CA: USDA Forest Service, Mendocino National Forest, 1990), 2.

⁸⁵ Harold K. Steen, *The U.S. Forest Service: A History* (Seattle and London: University of Washington Press, 1976), 132.

and nine varieties of pine trees. The name was changed in 1932 to the Institute of Forest Genetics, and the land and its facilities were donated to the USDA Forest Service in 1935, so that the institute could continue under public funding. Since transfer to the Forest Service, scientific breeding experiments and practices have been advanced and exported at the institute, such as hybridization techniques, controlled pollination techniques, and elevational seed-source studies.⁸⁶ In 1949, the institute planted an experimental test plot of several western pines and their hybrids in order to compare growth and vigor between parents and hybrids.⁸⁷ All of these efforts would inform the work of what would become in 1974 the Chico Tree Improvement Center on the grounds of the former Chico Plant Introduction Garden. In 1988, the newly named National Forest Genetics Laboratory was incorporated into the National Forest System as a unit of the Eldorado National Forest, further integrating genetic research and practices into the reforestation program of the Forest Service's Pacific Southwest Region.

History of the Chico Plant Introduction Garden (Forest Service Site #05-08-60-02)

Site Selection and Land Acquisition, 1900-1904

The site of Chico was chosen as the nation's second of four original federally operated plant introduction gardens for a number of social and climatic reasons. For one thing, the 'progressive' citizens of Chico were a driving force, as discussed below. John Bidwell's Rancho Chico had also proven Chico as a suitable location for the introduction of exotic plants and drupaceous fruit and nut crops. David Fairchild himself cited the early crop experimentations of John Bidwell as one factor in the selection of crops to be introduced into the new Chico Plant Introduction Garden:

Mr. Bidwell had introduced various interesting plants, among them the cassaba (sic) melon. In 1904 this fruit was just beginning to appear in the markets in California, and since then it has become a feature of the autumn and winter markets throughout the country. The success of this melon encouraged us to introduce all the varieties we could find from the Caucasus and the oases of western Asia, where it is native. The winter melons on our markets today represent a product of the breeders' art to which strains of these varieties contributed their part.⁸⁸

Finally, Chico's seasonal rainfall, hot summers, mild winters, fertile alluvial soil, long growing season, water supply, and extensive irrigation facilities were well suited to support a wide variety of crops.⁸⁹ In the words of Beverly Thomas (B.T.) Galloway, an early USDA Chief of the Bureau of Plant Industry, "When one finds, as I did in this valley, orange, walnut, palm, camphor, apricot, apple and prune trees growing side by side, it seems marvelous. It is unique."⁹⁰

Though the Sacramento Valley in general, and the town of Chico in particular, were considered ideal for the establishment of a plant introduction garden, the exact location of the garden was still in question as

⁸⁶ "History of Institute of Forest Genetics," USDA Forest Service, Pacific Southwest Research Station, Accessed October 28, 2019, <https://www.fs.fed.us/psw/locations/placerville/history.shtml>.

⁸⁷ Dempsey, "Chico's Lost Arboretum," <http://friendsofbidwellpark.org/park-info/environment-wildlife/chicos-lost-arboretum/>.

⁸⁸ Fairchild, *The World was my Garden*, 301.

⁸⁹ Moon, *Chico*, 37; Fairchild, *The World was my Garden*, 300; Graham, "Plant Introduction Garden at Chico," 16.

⁹⁰ W.J. Costar, "Chico, Butte County," *OutWest* 24, no. 6 (June 1906): 571.

of the turn of the 20th century. The federal government was at first most interested in land that was part of Rancho Chico, owned by John Bidwell himself, and home to the Hooker oak, an extremely large and renowned valley oak tree. Upon John Bidwell's death in 1900, his wife Annie Kennedy Bidwell was forced to sell part of her late husband's sprawling estate. She was solicited by a senator and former governor of California, among others, to sell to the federal government, though the "thought that it [the Hooker oak] should stand behind gates in a government garden was repellant to her."⁹¹ Instead she deeded some 1,903 acres to the people of Chico as a public park, which would become today's Bidwell Park.

Direct purchases of land by the federal government were not in vogue at the turn of the 20th century, especially when it came to withdrawals of agricultural land for government purposes.⁹² In fact, as of 1904, the USDA strongly preferred that the future site of federal plant introduction gardens be located on donated lands.⁹³ Citizens and businessmen of Chico, engaged and committed to the establishment of a federal plant introduction garden in their hometown, formed the Plant Garden Company Corporation in 1904 with the intent of purchasing suitable lands for the purpose. The Plant Garden Company's first principal trustee was E.W. Hilgard, Director of the Agricultural Experiment Stations of the University of California, School of Agriculture, whose interests lay in aspects of forestry and agricultural research; but an auxiliary motivation of the Company was economic.⁹⁴ The campaign to host this garden anticipated the "expenditure of vast sums of money for labor and other necessities."⁹⁵ There was also a sense at the time that the promotion of exotic crops and plants would not only burgeon new industries in their own right, but would also demonstrate Chico's position as "the garden spot of the world," "an advertising feature the value of which can hardly be overestimated."⁹⁶ Donations were collected by the Company, while Palemon Howard (P.H.) Dorsett of the USDA and Arnold V. Stubenrauch, a professor from the University of California, scouted for a suitable location away from Bidwell's lands in Chico, or elsewhere in California if need be.⁹⁷ The Chico Chamber of Commerce located 89 acres, three miles southeast of Chico, owned by Joseph Franklin Entler, a former employee of John Bidwell who himself was known for his garden and orchards.⁹⁸ The price of the land was \$9,000, \$2,000 short of what had been collected by the Company.⁹⁹ The Sacramento Valley Development Association stepped in, along with local newspapers, the final \$1,000 for purchase was donated by the Butte County Board of Supervisors, and the land purchase was completed by the federal government's deadline of August 1, 1904.¹⁰⁰ On September 17, 1904, the land was conveyed by donation as a cooperative venture between the USDA and E.W. Hilgard, Director of the Agricultural Experiment Stations of the School of Agriculture of the University of

⁹¹ Graham, "Plant Introduction Garden at Chico," 16.

⁹² Jones and Stokes Associates, Inc., *Chico Plant Introduction Garden*, 3.

⁹³ Graham, "Plant Introduction Garden at Chico," 17.

⁹⁴ Miller & Greenway, *An Evaluation*, 2.

⁹⁵ Graham, "Plant Introduction Garden at Chico," 16.

⁹⁶ Costar, "Chico, Butte County," 571; Graham, "Plant Introduction Garden at Chico," 16.

⁹⁷ Frances Miller and Greg Greenway, *History of the Chico Tree Improvement Center and Office Building* (Willows, Ca: USDA Forest Service, Mendocino National Forest, 1991), 2.

⁹⁸ Jones and Stokes Associates, Inc., *Chico Plant Introduction Garden*, 5.

⁹⁹ Graham, "Plant Introduction Garden at Chico," 17; Miller & Greenway, *An Evaluation*, 2.

¹⁰⁰ Jones and Stokes Associates, Inc., *Chico Plant Introduction Garden*, 6; Graham, "Plant Introduction Garden at Chico," 17.

California.¹⁰¹ The Deed of Trust specified the conveyance for the purposes of “propagating, cultivating and testing valuable seeds and plants, and for the demonstration of such problems as relate thereto.”¹⁰²

Early Construction, Activities, and Contributions of Frank N. Meyer, 1904-1918

Apart from plowing and planting, early human modifications to the grounds were not extensive, consisting of a few irrigation ditches and drainages. According to a survey of the original 89-acre land conveyance, there were no buildings or substantial improvements on site as of May 4, 1904. The 89 acres were composed of 58 ⁶⁷/₁₀₀ acres of arable land and 30 ²⁹/₁₀₀ acres of slough land. Months before the sale of the land for the Chico Plant Introduction Garden was finalized, plants and other materials were already packed and ready for shipment from Washington, D.C., and P.H. Dorsett was already on site, making some initial grounds-clearing and plantings.¹⁰³

David Fairchild visited the site in 1904 ostensibly to “settle the numerous problems connected with its maintenance and personnel.” There he found P.H. Dorsett, the first administrator in charge of the Chico Plant Introduction Garden, and his associates “working with feverish activity to put the land in order, construct the buildings and greenhouses, erect the pumping plant and equip the garden to accommodate the stream of exotic seeds and plants which had already begun to pour in on them.”¹⁰⁴ By February 1905, improvements underway included a pumphouse, a storehouse, a barn, and multiple glass-enclosed greenhouses.¹⁰⁵ A photograph from June 1906 shows at least one greenhouse, one residence, one multi-story building, and one outbuilding (see Figure 10 below).¹⁰⁶ By June 1907, an Office Building (Laboratory) and at least three small wood-frame cottages were under construction.¹⁰⁷ Dorsett and associates maintained an office in Chico until these facilities were made fit for use.¹⁰⁸

¹⁰¹ Jones and Stokes Associates, Inc., *Chico Plant Introduction Garden*, 6.

¹⁰² Miller & Greenway, *History*, 2.

¹⁰³ Graham, “Plant Introduction Garden at Chico,” 17; Jones and Stokes Associates, Inc., *Chico Plant Introduction Garden*, 1-5.

¹⁰⁴ Fairchild, *The World was my Garden*, 300-301.

¹⁰⁵ Jones and Stokes Associates, Inc., *Chico Plant Introduction Garden*, 1.

¹⁰⁶ Costar, “Chico, Butte County,” 571.

¹⁰⁷ Miller & Greenway, *History*, 2.

¹⁰⁸ Jones & Stokes Associates, Inc., *Chico Plant Introduction Garden*, 1.



Figure 9: Workers break ground ca. 1907 at the Chico Plant Introduction Garden, photograph courtesy of Barbara R. Wilson and the Meriam Library Special Collections of California State University, Chico.

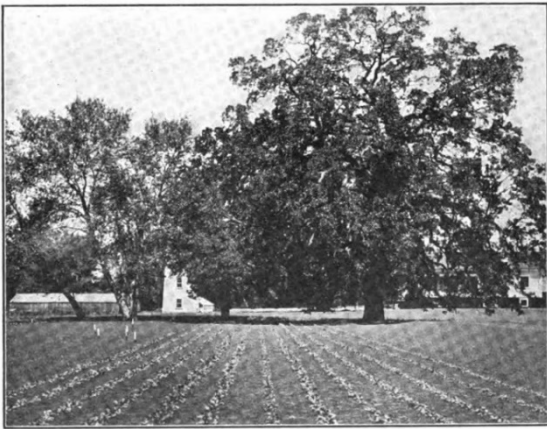


Figure 10: View of the grounds in 1906, with greenhouse to left and original tankhouse at center, from Costar, "Chico, Butte County," 571.



Figure 11: View of the Chico Plant Introduction Garden ca. 1920, with one of its original barns in the background. Photograph taken by John Nopel. Photograph courtesy of the Meriam Library Special Collections of California State University, Chico.

Chico's ecological niche was in large part to evaluate, propagate, and disseminate drupaceous pitted fruit and nut species, in addition to certain shade trees and ornamental crops, especially those predicted to be suitable to the warm arid climate of the West Coast.¹⁰⁹ Some of the first exotic plants to arrive on site were from Japan, many collected by David Fairchild himself, and included bamboo, lily bulbs, lotus plants, bitter orange, Japanese blossoming cherry trees (such as those now famously planted in Potomac Park of Washington, D.C.), a fruit called nagi, and various species of udo, a Japanese leafy green.¹¹⁰ Pistachio stock from the Middle East and persimmon stock from China arrived in 1906, three varieties of jujube (a small plum-like fruit) from China arrived in 1907, and July 1908 saw a shipment of 15 tons of plants and seeds collected from East Asia by USDA Plant Explorer, Frank N. Meyer.¹¹¹ In addition to those just mentioned, Meyer also collected and sent back varieties of grape, winter wheat, pitted fruits, shade trees, chestnuts,

¹⁰⁹ Hodge & Erlanson, "Federal Plant Introduction," 324-325; Klose, *History*, 137.

¹¹⁰ Jones & Stokes Associates, Inc., *Chico Plant Introduction Garden*, 6.

¹¹¹ Graham, "Plant Introduction Garden at Chico," 17.

Chinese cherries, Crimean olives, “Afghasian” apples, apricots, wild almonds, tung trees, and a dwarf lemon that would come to be known as the Meyer lemon.¹¹² This edible dwarf lemon (Figure 124) was an ornamental potted plant in China that came to thrive in the citrus districts of California, Florida, and Texas, but does not ship well, making it a specialty item wherever it is cultivated. The ornamental pistachio, which still flourishes on site as an ‘avenue tree’ of dramatic fall foliage, was collected by Meyer from cuttings around ancient temples in China’s western hills.¹¹³ P.H. Dorsett said of this particular tree: “The peculiar beauty of the Chinese pistache [sic]... and the great age to which it lives have suggested its trial as an avenue tree... A trial avenue a quarter of a mile long, planted at the Chico garden in 1910, already makes an excellent appearance.” He also presciently stated “in the not distant future pistache [sic] culture will be an established commercial industry of considerable importance in this country.”¹¹⁴



Figure 12: *Pistacia Avenue, Chico Plant Introduction Garden, 1930s. Photograph from Jones & Stokes Associates, Inc., Application for California Point of Historical Interest, 1995.*



Figure 13: *An early lotus pond on the grounds of the Chico plant introduction garden. From Costar, “Chico, Butte County,” 570.*

Meyer collected more than 2,500 species and varieties of plants during his 13-year career as a USDA plant explorer, many of which passed through the ranks of the Chico Plant Introduction Garden and some of which can still be found there. His travels took him from China to Korea to Mongolia, Russia, Siberia, Crimea, Azerbaijan, Armenia, Turkmenistan, Turkestan, and the Caucasus Mountains.¹¹⁵ Meyer’s collection of 42 varieties of Chinese soybeans quite literally revolutionized both American agriculture and the American diet. Meyer visited the Chico Plant Introduction Garden at least three times, in 1905, 1908, and in 1915 in the company of David Fairchild who recounted that “Meyer and I set forth for the Garden at Chico where so many of his early collections were growing. It was a real pleasure to take him through the rows of plants. There were so many interesting introductions that it was bewildering as well as fascinating.”¹¹⁶ While operations of the Chico Plant Introduction Garden did not call for plant material to be retained on site, nevertheless employees “planted many specimens in the slough area to save them,”

¹¹² Jones & Stokes Associates, Inc., *Chico Plant Introduction Garden*, 6.

¹¹³ Graham, “Plant Introduction Garden at Chico,” 17.

¹¹⁴ P.H. Dorsett, “The Plant-Introduction Gardens of the Department of Agriculture,” *Yearbook U.S. Dept. of Agriculture, 1916* (Washington, D.C.: US Department of Agriculture, 1917): 140.

¹¹⁵ Hyland, “History,” 29.

¹¹⁶ Frank N. Meyer, “Letters of Frank N. Meyer,” U.C. Davis Library, accessed December 9, 2019, <https://archive.org/details/lettersoffranknm04fran>: 70-e (194 of Vol. 1); Fairchild, *The World was my Garden*, 443.

and much of Meyer's botanical legacy remains on site to this day.¹¹⁷ One of the most storied of the early USDA Plant explorers, Meyer is said to have walked 1,000 miles from a Chinese railhead, collecting samples of any plant that looked interesting, and returning "tired, but satisfied."¹¹⁸ He was one of the first westerners to make this trek across China's vast interior. Meyer met an untimely death in 1918 when he disappeared overboard from a riverboat on the Yangtze River.¹¹⁹



Figure 14: Photogenic and adventurous, USDA Plant Explorer Frank N. Meyer was something of a celebrity in his own time, chronicled in major newspapers including the Washington Post and the Los Angeles Times. Here he is pictured in China in 1909 and 1910 "doing the impossible, getting along in impossible places and with impossible people" according to a journalist of his day.

In these early years, more than 30 new plant specimens arrived every year for study and propagation, oftentimes with planting and care instructions from the collector himself. The first action taken would be to graft incoming buds and scions onto local rootstocks, usually in a greenhouse nursery. If/when a plant became established on the local rootstock, two specimens were subsequently propagated for transfer into the fields. Once seeds or seedlings were being reliably produced on site, they would become available for distribution to interested growers, who were asked to keep records of their growth for several years.¹²⁰ Under the 'Fairchild system' of plant distribution and evaluation, plant material was sent to anyone who asked for it in order to provide as many sources of feedback as possible.¹²¹ Tung trees were distributed from Chico in 1906 and 1907, instigating a fledgling tung oil industry in the Gulf Coast states that would prove to be a major part of America's World War II efforts.¹²² In 1909, the Chico Plant Introduction Garden distributed more than 5,000 plants, including wild Chinese peach, Chinese elm (today an invasive found throughout the arid American West), a Chinese poplar, Chinese jujube, and edible hawthorns.¹²³ Thousands of young ornamental pistachios were also distributed to parks throughout the country in the early 20th century, including to local recipients such as those historically found on Durham Road outside of Chico.¹²⁴

¹¹⁷ Robert Smith, "Interview with Robert Smith 7-25-91," interview by Fred Weatherill, 4.

¹¹⁸ Kaplan, "Conserving," 5.

¹¹⁹ Hyland, "History," 29-30.

¹²⁰ Jones & Stokes Associates, Inc., *Chico Plant Introduction Garden*, 6.

¹²¹ Smith, "Interview," 3.

¹²² Dorsett, "The Plant-Introduction Gardens," 139.

¹²³ Klose, *History*, 124.

¹²⁴ Dorsett, "The Plant-Introduction Gardens," 140.

Both research and distribution were overlapping driving forces behind the garden's work. Bamboo varieties were propagated in Chico in 1909, the successful growth of which evidenced that American growers could produce bamboo canes of a quality comparable to that found in East Asia.¹²⁵ In 1910, an almond variety from Russia was crossed with a Spanish variety to produce a superior commercial product. Crosses of the Japanese chestnut and the American chinquapin at Chico produced a hybrid chestnut variety that showed a strong resistance to the chestnut blight that devastated the American chestnut population in the early 20th century.¹²⁶ Early experiments on various rootstocks for the edible *Pistacia vera* pistachio were occurring at this time. Even culinary experiments were not uncommon. According to David Fairchild, "ripe jujubes, when eaten raw, are amusing rather than delicious," but when candied by a wife of one of the garden's superintendents, they became a dish worthy to be served at the annual banquet of the National Geographic Society.¹²⁷



Figure 15: Row of introduced crops, transferred into fields, surround the garden's first set of greenhouses, four of them complete and two still under construction as of 1913. Photograph courtesy of Barbara R. Wilson and the Meriam Library Special Collections of California State University, Chico.

J. Everett Morrow, "Recollections of J. Everett Morrow," interview by Ramona R. Flynn, *Oral History Program*, Association for Northern California Records and Research and California State University, Chico, December 18, 1973: 20-22.

¹²⁵ Klose, *History*, 132.

¹²⁶ Dorsett, "The Plant-Introduction Gardens," 141.

¹²⁷ Fairchild, *The World was my Garden*, 247.

Expansion of Facilities and Mission, 1918-1957

By 1917, the federal government's position on direct purchase of land for administrative purposes had softened, and the Chico Plant Introduction Garden more than doubled in size that year when Congress approved the purchase of two adjoining properties, bringing the total acreage of the property up to 209 acres and giving it the footprint it retains today.¹²⁸ By this time, the property contained the buildings described above, as well as four greenhouses, a barn, a jujube orchard, a fig orchard, and a vineyard. That same year, the garden received some 12,000 plant importations, necessitating some upgrades. In 1920, the property was formally conveyed over to the USDA Agricultural Research Service from the Chico Plant Garden Company Corporation for a sum of \$1.00, and by 1924 the property consisted of its main office and new Office Annex Building, four residences, two barns, six greenhouses, two slat houses (or lath houses), two pumphouses, a water tower, a tool shed, additional small outbuildings, a poultry yard, and a weather station, as well as an apple nursery, a grape nursery, a bamboo grove, a citrus orchard, a jujube orchard, a fig orchard, berries, roses, olives, chestnuts, alfalfa, cactus, succulents, and a number of test orchards, all fed by irrigation systems that extended across much of the 209-acre property.

Sometime between 1907 and 1920, the Edgar Slough, today known as Comanche Creek, which traverses the property from east to west, was channelized from a naturally braided system. As of 1924, waters from the slough were incorporated into an extensive system of concrete irrigation lines that were dubbed the Phelan-Parrot Irrigation System, in honor of James D. Phelan, then mayor of San Francisco, and John Parrot, a San Francisco businessman, who both contributed generously to the acquisition of the land.¹²⁹ This system extended across much of the newly acquired lands. With its 1917 purchase of land, the plant introduction garden also acquired a water right on Butte Creek, which adjoins the property on its east side. A secondary irrigation system for the southeastern portion of the garden was established from Butte Creek by means of an off-property electric pumping plant, dubbed the Pumphouse at Creek (Butte Creek Pumphouse), constructed in 1924. The right-of-way for a water pipeline from the Pumphouse at Creek (Butte Creek Pumphouse) was acquired from El Oro Dredging Company in 1924, and subsequently 17,325' of underground concrete water pipes were installed, as well as a number of surface concrete surges, vents, and valves. 1924 also witnessed the surfacing of 2.5 miles of roads on site.

1932 saw the expansion of the property's facilities as well with the construction of the headhouse. Adjoined to the property's greenhouses, slat/lath houses, and to two fish ponds, the headhouse was essentially a factory line of plant propagation, complete with a seed room, a potting room, and a propagation area with doorways directly into the greenhouses. Plant introductions could be handled with great care indoors when first received, then once grafted or otherwise established, they could be moved to the greenhouses where climate and irrigation controls would ensure further growth success, then they could be hardened off to shaded outdoor conditions in the slat/lath houses, before finally being planted in the fields until they reached maturity. The headhouse was equipped also with a packing area, a fumigation area, a shop area, lumber storage, and supplemental office space, making the Chico Plant Introduction Garden an operationally efficient and self-contained whole.

¹²⁸ Miller & Greenway, *An Evaluation*, 3.

¹²⁹ Jones & Stokes Associates, Inc., *Chico Plant Introduction Garden*, 1.

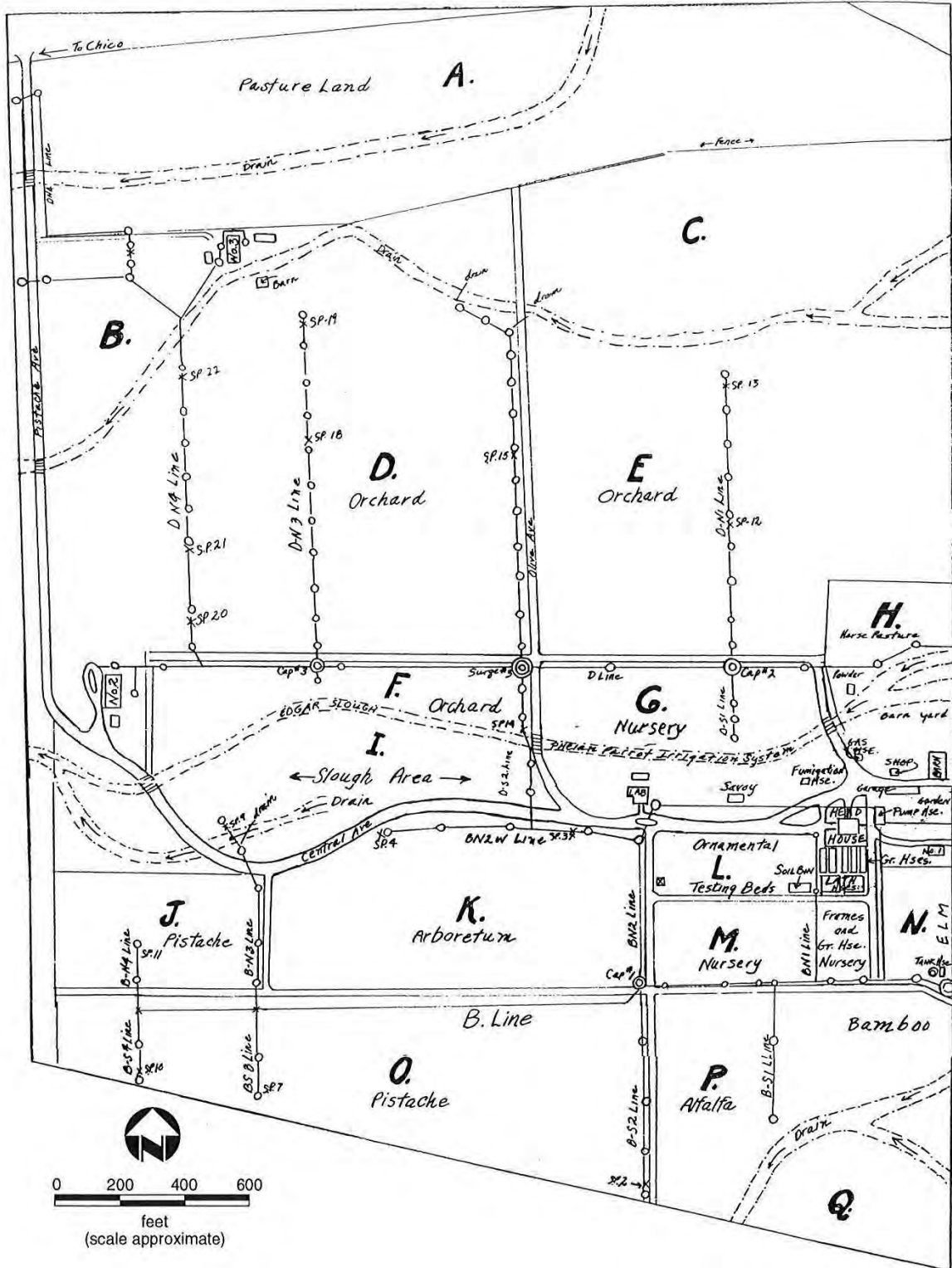


Figure 16: Feature map of the Chico Plant Introduction Garden, drawn on July 6, 1936, showing main irrigation lines and surges, three residences, two barns, five greenhouses, the Office Building (Laboratory) and annex, and the newly constructed headhouse, as well as the 'Savoy,' presumably a guest quarters for visiting plant explorers and researchers. This same map was re-used to plan and display updates to the property until at least 1962.

At the same time that the garden's grounds and facilities were expanding, so too was its mission. By the 1920s, the USDA Bureau of Plant Industry became increasingly focused not just on new food crops, but of varieties of existing crops that could be bred to increase resistance to insect infestation, disease susceptibility, and climatic conditions such as drought. Given Chico's location in an ideal region suited to the propagation of orchard crops, this garden became a hotbed for the study of fruit and nut trees, and to a lesser degree ornamental and shade trees.¹³⁰ Intensive work was conducted with a wide variety of fruit and nut trees: cherries, peaches, prunes/plums, pears, apples, citrus, nectarines, apricots, grapes, persimmons, fig, jujube, mulberry, chestnuts, walnuts, almonds, and most famously, the pistachio (discussed below) and the kiwifruit. Ornamentals and shade trees too remained a portion of the garden's plantings, including eucalyptus, junipers/cedars, bamboo, alfalfa, and *pyracantha*.

While a large part of the horticultural program that converted the Chinese gooseberry into the modern-day commercial kiwifruit occurred in New Zealand, nevertheless Chico was its first port of entry into North America in 1926, followed by additional specimens from 1930 to 1935 collected by USDA Plant Explorer Hayward R. Wright. From rootstock in Chico, the large-fruited 'Hayward'-variety kiwifruit was distributed to growers throughout agricultural regions of California in the 1960s.¹³¹ The mother and father kiwifruit vine, brought over from New Zealand by Wright in 1934 or 1935 served as the progenitors to what grew into a domestic and export industry in California beginning in the 1970s. The mother and father kiwifruit vine are still on site as of 2019 and the mother kiwifruit vine is still producing fruit a full 85 years after its introduction, making it the oldest-producing kiwifruit vine in the country (see Figure 125 and Figure 126).

This era of expansion was capped in 1941 with the redesign and enlargement of the property's primary 1907 office building and laboratory. Executed in the art moderne variant of the modernistic style, which at that point was being championed by the Bauhaus school of European architects who had emigrated to America to flee the onset of World War II,¹³² it not only provided additional space for offices and a library, but it strikingly redefined the image of the property from one of humble craftsman and agricultural origins to that of a sophisticated and modern operation of national and global scientific and horticultural import. Also around this time were constructed on site a 3-bay garage, a gasoline pump, a new bridge, an additional barn, and an expanded water system with a new pump and additional water lines.

¹³⁰ Jones & Stokes Associates, Inc., *Chico Plant Introduction Garden*, 7.

¹³¹ James A. Beutel et al., "A New Crop for California: Kiwifruit," *California Agriculture* (October 1976): 5.

¹³² Virginia Savage McAlester, *A Field Guide to American Houses* (New York, NY: Alfred A. Knopf, 2018), 548.



Figure 17: Chico Plant Introduction crew, 1936. Top row from left: Warren Pritchett, Francis Kitchen, Oscar Harris, W.J. Everett Morrow (superintendent of the garden during two periods from 1911 to 1916 and from 1921 until 1951), Joe Long (director), Elwood Mitchell. Bottom row from left: Clarence Jackson, Luther Stone, Brian Douglas, Charlie Rath, Lloyd Brundage, Chick Browning, and Lloyd Shafer.

As of 1955, the Chico germplasm collection consisted of “more than 1100 clones and varieties (as well as 3000 stone-fruit seedlings) comprising 250 cherries, 195 apricots, 450 peaches, 70 nectarines, and 200 plums,” in addition to “250 to 300 miscellaneous woody-ornamental and specialty-crop accessions; 7 named pistachio-nut varieties..., 750 seedlings and 9 species of *Pistacia*; 200 English or Persian walnut seedlings; Oriental chestnuts; as well as miscellaneous fruits such as the Chinese gooseberry (*Actinidia chinensis*) [kiwifruit], Chinese date or jujube (*Zizyphus jujube*), olive, pear, oriental persimmon, and pomegranate.”¹³³ Evaluation of these fruits and nuts involved detailed recordation of tree variety characteristics including time of bloom and foliage, hardiness, disease and insect resistance, and yield, and of fruit and nut characteristics such as size, color, quality, and maturity. Varieties of these fruits and nuts that were either rated as having no value, or were so widely distributed that they could be readily obtained outside of the garden, were discarded after making them available to any interested horticulturists.¹³⁴ Though a large part of the collection regularly amounted to varieties that did not compare well with varieties already available on the U.S. market, sometimes an introduction would prove to be useful as a cross-breed for a particular trait, such as genetic resistance to various plant maladies.¹³⁵ Other times, an introduced variety would prove to be economically feasible on the American market and

¹³³ Hodge, “Federal Plant Introduction Gardens,” 93.

¹³⁴ Hodge, “Federal Plant Introduction Gardens,” 93-95.

¹³⁵ Hodge & Erlanson, “Federal Plant Introduction,” 210-211.

would enter into American agriculture as a ‘graduate’ of the horticultural program of one of the federal plant introduction gardens.

Notable ‘graduates’ of this era of the Chico Plant Introduction Garden, i.e. those exotic varieties of plants that were successfully adopted by growers and nurseries, include the Meyer lemon, the Barouni olive, the Methley plum, the Quetta nectarine, Lippiatt’s late orange nectarine, the Shalil and Yunnan peaches, the Li and Lang jujubes, and the Fuyu non-astringent persimmon. Ornamentals that were ‘graduated’ from Chico include the Chinese holly, the carob tree, many varieties of bamboo, the Nanking cherry, the dwarf peach, and 203 varieties of juniper.¹³⁶ Not only local and regional growers and nurseries, but also state and university agricultural experiment stations, forestry stations, botanic gardens, and arboreta became the recipients of this horticultural output.¹³⁷ In many instances, state and university experiment stations utilized stock from Chico for use in their own local breeding programs,¹³⁸ essentially continuing the research started at Chico, allowing the federal garden to move on to newer incoming accessions. In some instances, seeds of ornamental plants were collected and sent to Washington, D.C., for exchange with nurseries and botanical gardens all over the world.¹³⁹

Development of the ‘Kerman’ Cultivar of Pistachio, 1929-1957

One of the Chico Plant Introduction Garden’s major accomplishments was the production of the ‘Kerman’ cultivar of commercial pistachios, after four decades of experimental breeding, cultivating, pruning, and other horticultural practices. Of the approximately 15 species in the genus *Pistacia*, only one species of Pistachio tree produces a nut of adequate size to be commercially grown, *Pistacia vera*, though the other species are commonly used as rootstock or as ornamental shade trees.¹⁴⁰ *Pistacia vera* is native to Central Asia, with its center of diversity in southern Turkmenistan and Iran,¹⁴¹ where it has been consumed locally for millennia. The principal Old World exporters of the nut at mid-20th century were Turkey, Iran, Italy, Syria, and Afghanistan. Although the pistachio had been available as an import on the American market as early as 1880, it was not until the advent of the vending machine in the 1930s that Americans took to the product in any numbers, prompting imports to more than double between 1946 and 1952.¹⁴²

Though pistachio rootstock collected by David Fairchild and others arrived at Chico as early as 1904-1906, and early experiments on various rootstocks for the edible *Pistacia vera* pistachio occurred in the 1910s and 1920s, the product of these experiments failed to pass muster as North American commercial varieties, where high production costs demand high reliability of output in terms of yield, kernel size, and shell-splitting, or dehiscence. Research into the pistachio’s potential as a North American commercial crop became a stated objective of the USDA Office of Foreign Plant Introduction in 1929.¹⁴³ During that year, USDA plant scientist William E. Whitehouse spent six months in Iran, searching for what he considered to

¹³⁶ Moon, *Chico*, 38.

¹³⁷ Jones & Stokes Associates, Inc., *Chico Plant Introduction Garden*, 17.

¹³⁸ Hodge, “Federal Plant Introduction Gardens,” 93.

¹³⁹ Joley, “Interview,” 9.

¹⁴⁰ W.E. Whitehouse, “The Pistachio Nut – A New Crop for the Western United States,” *Economic Botany* 11, no. 4 (October 1957): 281.

¹⁴¹ Don Parfitt, Craig Kallsen, and Joseph Maranto, *Pistachio Cultivars* (Davis, CA: University of California, Dais, Pomology Department, 1995). 62.

¹⁴² Whitehouse, “The Pistachio Nut,” 281.

¹⁴³ Whitehouse, “The Pistachio Nut,” 291.

be the most distinctive pistachios on the market and collecting some 20 pounds of seed in order to start a breeding program at Chico.¹⁴⁴ This systematic introduction, evaluation, and research program sought to isolate and rectify some of the problems limiting the expansion of the nut crop as a commercial product. These problems included a low success rate of transplanted trees, risk of late spring frosts, the lack of a suitable rootstock that was immune or resistant to nematode attack and other fungal diseases, and timing of wind-generated pollination such that cross-pollination of male and female trees would be coordinated successfully.¹⁴⁵

The Kerman variety of *Pistacia vera* (distinct from the ‘Kerman’ cultivar) was collected by Whitehouse in Iran in 1929 from “a pile of drying nuts in the orchards of the Agah family, who were prominent growers at Rafsanjan” in the Iranian province of Kerman, renowned for a 700-year-old pistachio tree and for its still-thriving pistachio industry.¹⁴⁶ Test plots were planted at Chico within a year, though since it takes seven to ten years before a pistachio tree begins to produce nuts, it was not until 1936 that the Kerman variety, from the seed lot of Plant Inventory (P.I.) 86372, was one of approximately 20 varieties selected for continued propagation.¹⁴⁷ Introduced to Chico’s long dry summers and mild winters, and with the benefit of thousands of years of selective breeding in its native Iran, the progenitor of the ‘Kerman’ cultivar showed certain key signs of commercial promise, including a late bloom to avoid late spring frost, large kernel size, and reliable dehiscence up to 75% of the time. Given that it takes a pistachio tree 15 to 20 years to reach peak production, the propagation required to isolate the commercial ‘Kerman’ cultivar (or cultivated variety) was a slow process. Experiments were undertaken on site with different *Pistacia* species as rootstocks, various budding and grafting techniques, seed harvest and cold-storage techniques, timing of germination, practices to stimulate germination, soil moisture regimens, different male *Pistacia* species and varieties utilized as pollinators, different pruning techniques, different transplanting techniques with containers, and different harvesting and drying techniques that removed the need to dye the pistachio shell with red vegetable dye for general consumption.¹⁴⁸ As of 1952, it was evident that of thousands of trees planted, manipulated, and cloned from Whitehouse’s 1929 seeds, the ‘Kerman’ cultivar performed best and was demonstrated to be economically feasible as a North American crop. The ‘Kerman’ cultivar of *Pistacia vera* was subsequently released to commercial growers of California’s Central Valley in 1957.

¹⁴⁴ Themis J. Michailides and David P. Morgan, “Panicle and Shoot Blight of Pistachio: A Major Threat to the California Pistachio Industry,” *APSnet Features*, January 2004, 1.

¹⁴⁵ Hodge, “Federal Plant Introduction Gardens,” 95-96.

¹⁴⁶ “History – Pistachio Origins,” American Pistachio Growers, accessed December 11, 2019, <https://americanpistachios.org/growing-and-harvesting/history>.

¹⁴⁷ Parfitt et al., *Pistachio Cultivars*, 64.

¹⁴⁸ Whitehouse, “The Pistachio Nut,” 291-317.

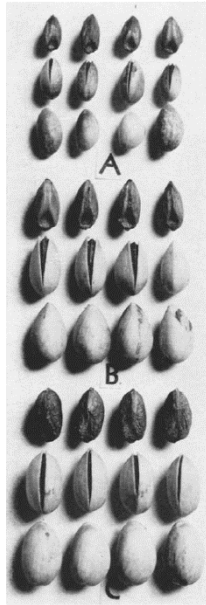


Figure 18: Pistachio nuts harvested at Chico around 1957. Progenitor tree is from the forests of Turkestan. From Whitehouse, "The Pistachio Nut," 286.



Figure 19: Pistacia vera in the 1956 spring flowering season at the Chico Plant Introduction Garden. From Hodge et al., "Federal Plant Introduction Gardens," 96.

As of 1957, the pistachio was a novelty crop with only a very small quantity produced commercially in California.¹⁴⁹ Despite the availability of an economically feasible cultivar and the climatic suitability of California's Central Valley, there was relatively little initial interest in the pistachio as a crop, likely due to the large capital investment for a tree crop that would not recoup its establishment costs for some eight years. It was not until 1976, after the Chico Plant Introduction Garden had ceased operations, that the first reportable North American commercial crop of 1.5 million tons was produced off of 1,500 acres and the California Pistachio Association was founded to support further research, distribution, and marketing. At this time, Iran was the primary producer and exporter of the global pistachio market. 1979 witnessed the Iran hostage crisis, which resulted in trade sanctions that temporarily banned Iranian imports, including pistachios. The California "natural pistachio" filled the void with a product readily identified by its unblemished, undyed, naturally split shell.¹⁵⁰ In 1980, California alone produced 27 million pounds of pistachios, with the 'Kerman' cultivar as the primary female cultivar commercially grown throughout California.¹⁵¹ Geopolitical jockeying has ensued, and continues to this day. In 2008, the United States overtook Iran for that year as the world's leading producer of pistachios,¹⁵² with increases not just in total acreage of the crop under cultivation (today over 312,000 acres), but also with dramatic increases in the pounds per acre produced as a result of continued research and development of the 'Kerman' cultivar.

¹⁴⁹ Whitehouse, "The Pistachio Nut," 282.

¹⁵⁰ Ferguson, "The California Pistachio Industry," 39-41.

¹⁵¹ Parfitt et al., *Pistachio Cultivars*, 64.

¹⁵² Simran Sethi, "As Trump Defends Sanctions at the U.N., One Iranian Food – the Pistachio – Shows how Deeply Two Nation's Fates are Intertwined," *The New Food Economy*, accessed December 11, 2019, <https://newfoodeconomy.org/pistachio-iran-america-sanctions-united-nations-general-assembly/>.

Though Iran has in more recent years reclaimed its global primacy in terms of production, the value of the North American harvest has increased as well, making it the second most valuable nut crop in the United States, after almonds, with a net value to the California economy of \$1.6 billion.¹⁵³ The Chico Plant Introduction Garden's mother 'Kerman,' the genetics of which are present in nearly every commercial pistachio tree in California, Arizona, and New Mexico, is said to have died around 2012, though its legacy remains as arguably "the single most successful plant introduction of the 20th century."¹⁵⁴

The End of an Era, 1957-1974

While research and plantings continued on at Chico, and improvements continued to be made to the grounds, the field of exotic plant introductions was evolving as the era of colonialism finally fell apart in the aftermath of World War II. At the same time, the national system for introduction of exotic plant material was segmenting into one that favored regional, crop-specific, and trait-specific research collections over federally subsidized overarching work. Presumably it did not help that the areas from which Frank N. Meyer and others had historically collected material for introduction at Chico, including Russia, China, Persia, and the Middle East, became inaccessible to plant explorers for geopolitical reasons beginning in the 1920s and continuing for much of the 20th century. The National Seed Storage Laboratory in Fort Collins, CO, was opened in 1958 as a permanent repository for seeds and all manner and forms of plant germplasm, essentially rendering all other collections duplicative. The National Plant Germplasm System emerged in the 1970s with a stated mission not exclusively of exploration and plant introductions, but of conservation of existing genetic stock in order to ensure the survival of "the genetic diversity necessary to improve crop productivity and to reduce genetic vulnerability in future food and agriculture development, not only in the United States but for the entire world."¹⁵⁵ Despite a public relations campaign in 1956 and 1957 that touted "plant introduction as a federal service to agriculture," the Chico Plant Introduction Garden did not operate long enough to witness the commercial success of the kiwifruit or the pistachio.¹⁵⁶ That is not to say that research programs and other improvement activities did not continue during this period, but that their perceived import on the national stage had witnessed its peak.

Sometime prior to 1957, the Centerville County Road on the property's northern boundary was reconstructed into the present-day Skyway Road, altering the hydrology of the northern portion of the property which had previously been drained by a small creek called Stone Run. In 1957, a permit was issued to the Reclamation Board of the State of California for construction of the Butte Creek and Little Chico Diversion Canal and Levee along the eastern boundary of the property, essentially cutting off the northeastern and the southeastern corners of the property. This made access to water rights on Butte Creek problematic and rendered the Pumphouse at Creek (Butte Creek Pumphouse) and its associated irrigation system less functional. Therefore, 1957 witnessed a revamping of the property's irrigation water-supply system with the installation of approximately 1,200' of 12" underground concrete water pipe lines, plus a number of surface concrete surges, vents, and a 24" standpipe in the southeast corner of the property. 1962 saw a further upgrade of irrigation capacity with the installation of a new well and pump (the east well), and 1966 saw the construction of a new greenhouse, which is still standing on site

¹⁵³ "History – Pistachio Origins."

¹⁵⁴ Eric Hansen, "In Search of the Mother Tree," *Aramco World* 64, no. 6 (November/December 2013), accessed December 11, 2019, <https://archive.aramcoworld.com/issue/201306/in.search.of.the.mother.tree.htm>.

¹⁵⁵ White, "History and Operation," 18-19.

¹⁵⁶ Hodge & Erlanson, "Plant Introduction as a Federal Service," 189.

as of 2020. At the same time, of the original wood-frame residences on site, one was dismantled in the 1960s and another was moved off-property in the 1970s.¹⁵⁷

One notable research program of this era involved the *Camptotheca acuminata* tree, and its potential application in cancer treatment. Orchards of the tree, native to southern China and Tibet, were planted on site in 1963 and once established, material was sent to Dr. Robert E. Perdue of the USDA Agricultural Research Service's medical research branch in Beltsville, MD.¹⁵⁸ Present in the *Camptotheca acuminata* tree was found an alkaloid called camptothecin, which showed strong promise as an anti-leukemic and anti-tumor agent in preliminary clinical trials on animals.¹⁵⁹ Though it did not enter into immediate medical application, synthetic analogues of the alkaloid are used in oncological chemotherapy to this day. Though the project was ultimately terminated, the trees remained on site after the closing of the garden in 1974 and interest in their preservation and potential re-evaluation remained intact. As of 1994, in addition to two still existing *Camptotheca* orchards on site, there were two more 'planned cancer research production areas' that do not seem to have come to fruition.



Figure 20: A man stands in front of a *Camptotheca acuminata* tree, started at the Chico Plant Introduction Garden in late 1963. Photograph taken in April 1966. From Perdue, "Camptotheca acuminata," 22.

¹⁵⁷ Miller & Greenway, *History*, 2.

¹⁵⁸ Smith, "Interview," 1.

¹⁵⁹ Robert E. Perdue Jr. et al., *Camptotheca acuminata* Decaisne (Nyssaceae): Source of Camptothecin, an Antileukemic Alkaloid; *Technical Bulletin No. 1415* (Washington, D.C.: USDA Agricultural Research Service, 1970), 1-2.

Oilseed research was also conducted on site in the 1960s in an attempt to find a commercially successful source of cooking and industrial oils.¹⁶⁰ Though no one plant or variety was found to produce the requisite quantity and quality necessary for commercial oil production, one “little blue flower” imported for the trials was found after the fact to be resistant to the pesticide Round-up. Genetic engineers from the University of California, Davis, thence came to Chico, took cuttings of the plant, and ultimately incorporated this resistance into commercial varieties of tomato such that Round-up could be used on tomato fields to eradicate weeds while the tomato itself would be resistant to the pesticide.¹⁶¹

Work on the kiwifruit was continued until at least 1963. Work on pistachio research also continued at Chico until 1973, especially regarding the verticillium wilt fungus. As of June 30, 1973, when research operations were terminated and the garden’s collection began to be dismantled, there were still projects on site involving persimmons, plums, pomegranate, peaches, nectarines, jujubes, cherries, apricots, almonds, walnuts, and ornamentals, encompassing approximately 167 acres of exotic plantings.¹⁶² Whatever the reasons may have been, political, budgetary, or simply related to evolving policies and priorities, the Chico Plant Introduction Garden closed as an Agricultural Research Service facility on February 8, 1974. Employees of the station were subjected to a mandatory reduction-in-force, and some of the existing stock of plant materials was distributed to state and university agricultural experiment stations, especially the one at the University of California, Davis. Many specimens that were too old for transplant remained on site. The garden “was closed precipitously,” allowing employees only one season in which to conduct shut-down procedures, a process that “should have been two to five years just for distributing the material if they wanted to save it..., [but] at that time it didn’t seem like they wanted to save it.”¹⁶³

The Chico Tree Improvement Center, 1974-1992

The 209 acres of the Chico Plant Introduction Garden were formally conveyed to the USDA Forest Service on May 13, 1974, including existing property and buildings. Ten of these acres were reserved for pistachio seed and budwood production and nursery stock, and were permitted to the Pistachio Growers Association of San Jose for a period of five years. Unique plants that represented potentially irreplaceable genetic stock were identified for preservation by former plant introduction garden personnel, “until they could be reproduced elsewhere.”¹⁶⁴ Some other legacy plantings were retained, such as *Camptotheca acuminata* and exotic trees located around Comanche Creek, roads, buildings, and in the northwest quadrant of the property, but a large portion of the land was overhauled, with the Forest Service pursuing a program of research, development, and propagation of source-identified, genetically selected, lumber-producing mostly native trees, primarily ponderosa pine, Douglas-fir, and sugar pine, the seeds of which were to be used in the Pacific Southwest Region’s reforestation program. The property at this point took on its second life as a federal research center.

¹⁶⁰ Joley, “Interview,” 26-27.

¹⁶¹ John and Mary Kennedy, “Interview,” interview by John Fiske, *Region 5 History Project*, USDA Forest Service, Pacific Southwest Region, February 4, 2004: 7.

¹⁶² Daniel K. Chisholm, Mendocino National Forest Supervisor, *Chico Tree Improvement Center, Chico, California* (Willows, CA: USDA Forest Service, Mendocino National Forest, 1980), 5.

¹⁶³ Smith, “Interview,” 4; Joley, “Interview,” 11.

¹⁶⁴ Chisholm, *Chico Tree Improvement Center*, 5.

To start, seed cones (and later, cuttings) of the major timber species of California were selected for their superior traits and were collected from the national forests of California along 500-foot elevation bands. From the national forests, they were brought to the Chico Tree Improvement Center (the historic site of the Chico Plant Introduction Garden).¹⁶⁵ In general, seed were then extracted from the cones, cleaned, and put into cold storage to maintain a low, but not freezing temperature. Under these conditions, seed could be maintained for as many as 50 years. Prior to sowing, seeds were soaked for up to two days, some scarified to soften the seed coat, rinsed six to eight times to remove pathogens and dirt, and then dried. A period of after-ripening, involving exposure to low temperatures, moisture, and air for 30 to 90 days, mimicked the natural process of seed over-wintering until germination in the spring.¹⁶⁶

In 1975, the first one-year-old ponderosa pines, specifically selected from high-quality specimens, were planted in transplant beds at the new Chico Tree Improvement Center. Afghanistan pines were field-planted in 1976 at the property's northwest corner as a test plot for smog resistance. Sugar pine was soon to follow, with a test program to eliminate white pine blister rust by selecting for naturally resistant trees, then grafting nursery-bred scion trees onto rust-resistant rootstock to pass on the resistance to seeds that would then be distributed to various National Forest units.¹⁶⁷ A hedge-garden of over 900 giant sequoia trees was also planted in 1978 from rooted cuttings from the University of California, Berkeley.¹⁶⁸ In total, nine seed orchards were planned and executed. To support these efforts, legacy orchards were cleared, stumps removed, and fields were ripped, disked, levelled, and fumigated in advance of new plantings. In the course of this work in 1976, trenching activities uncovered four precontact burial sites that have subsequently received their own nomination to the National Register of Historic Places.

In 1978, forester Jack Kennedy was assigned as the first Director of the new Chico Tree Improvement Center, and the property subsequently witnessed an extensive overhaul. The property's irrigation system received a substantial upgrade, with two deep wells installed in 1979 at a cost of approximately \$98,000, followed by installation of industrial-grade pumps and an impact-sprinkler-head system in 1980 that encompassed much of the property. The interior of the 1932 headhouse was remodeled extensively, and its propagation and potting area incorporated into an upgraded containerized nursery system that included the 1966 greenhouse together with a new greenhouse, a new shadehouse, a new Pump/Injector Building that injects fertilizer directly into irrigation water, and cold-storage facilities. At the same time, the last of the original 1907 wood-frame residences, as well as a number of sheds, outbuildings, and appurtenances from the plant-introduction era were removed from the property.

The planting cycle at the Chico Tree Improvement Center consisted of sowing seeds in containers in the controlled setting of the nursery system, in order to produce stock for genetic evaluation, for reforestation efforts where genetically appropriate, and for use as rootstocks. The rootstock plantings were grown over the course of one to three years until they reached a size suitable for grafting. At that point, scionwood from source-identified, genetically selected timber species of California's forests would be grafted onto

¹⁶⁵ Chisholm, *Chico Tree Improvement Center*, 5.

¹⁶⁶ USDA Forest Service, *Nursery Operations* (Chico, CA: USDA Forest Service, Genetic Resource and Conservation Center), 1-2.

¹⁶⁷ Linda Kenyon, "Testing for Super Trees: Chico Center Strives to Develop Bigger, Better Forests," *The Sacramento Bee*, July 8, 1976, B3.

¹⁶⁸ Chisholm, *Chico Tree Improvement Center*, 8.

locally grown rootstock. Once established in a greenhouse, the united grafts would be maintained in place for several months before being moved to the shadehouse for hardening until ready for field-planting in one of the center's specific breeding-zone orchards. Cone production under this system is accelerated as a product of the mature scionwood that is utilized. Where it would take a ponderosa pine in a natural forested system approximately 45-60 years to start producing cones, it takes these united grafts only a third of that time once field-planted. The seeds extracted from these cones then become available for genetic evaluation, for reforestation efforts where genetically appropriate, and for use as rootstocks, and the cycle repeats itself. Ultimately the production capacity of the newly established containerized nursery system would approach 59,000 seedlings and 15,000 cuttings at any given time.¹⁶⁹



Figure 21: The 1980s-era shadehouse, part of the containerized nursery system of the Chico Tree Improvement Center.

The first field-planting of ponderosa pine from starter trees developed on site was in 1979, source-identified for a breeding zone encompassing the elevation bands of the Plumas, Lassen, and Tahoe National Forests. Source-identified ponderosa pine field-plantings followed for the breeding zone encompassing the elevation bands of the Eldorado, Stanislaus, and Sierra National Forests, as well as Douglas-fir for the Six Rivers and Klamath National Forests. The first harvest of cones on site took place in 1980, and yielded several hundred high-quality seeds which were stored for reforestation plantings within their respective breeding zones.¹⁷⁰ Ultimately the production capacity of these seed orchards would approach 30 pounds of seed per acre for ponderosa pine and 20 pounds of seed per acre for Douglas-fir and sugar pine. To this day, these field-planted seed orchards continue to produce seed cones that support the region's reforestation needs.

Plans for a second containerized nursery system on the property's northwest corner, in the area of the present-day Search-and-Rescue headquarters building, were pursued for a number of years in the 1980s, but were never executed. Given local interest in recreational opportunities, a Youth Conservation Corps crew constructed the center's nature trail along Comanche Creek in 1984.

The National Forest Genetics Laboratory in Placerville, CA, became part of the National Forest System in 1988. This facility, just 100 miles south of Chico, both supplemented and to some degree supplanted the work of the Chico Tree Improvement Center. Founded to address genetic conservation and management, the National Forest Genetics Laboratory has become the seed bank of the Southwest Region. Nearby nursery facilities in Placerville not only began to receive and propagate seed cones from the Chico Tree Improvement Center, but also from throughout the region, which removed the necessity for Chico to have the capacity to handle, process, and germinate incoming seed.

¹⁶⁹ Chisholm, *Chico Tree Improvement Center*, 6.

¹⁷⁰ Chisholm, *Chico Tree Improvement Center*, 5-6.

Contraction of Mission and Facilities, 1992-2019

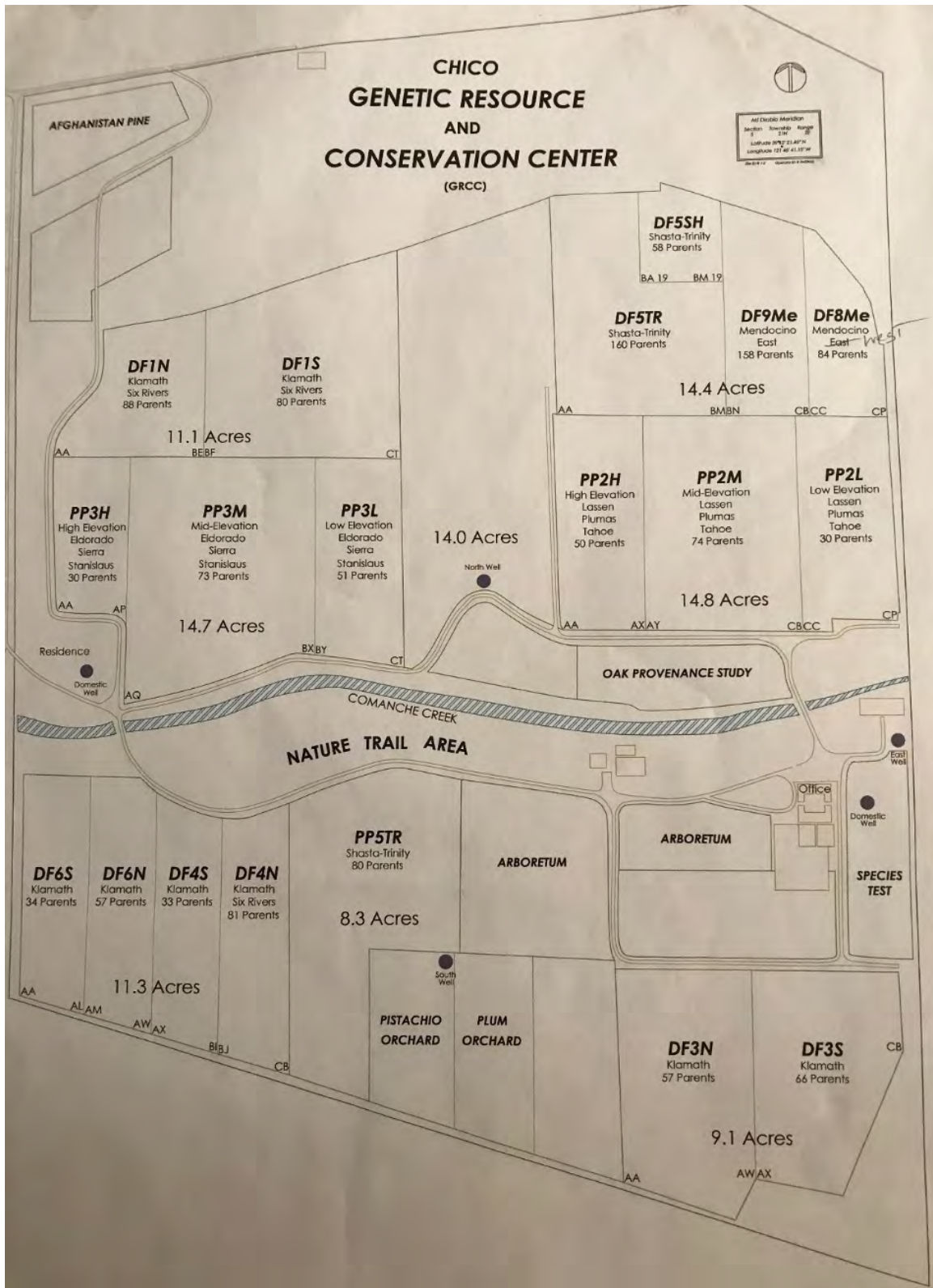


Figure 22: Modern field-plantings and orchards of the present-day site of the historic Chico Plant Introduction Garden. Note locations as well of all five wells on site.

In 1992, the Chico Tree Improvement Center was renamed the Chico Genetic Resource and Conservation Center, and its mission was re-oriented around management, conservation, and propagation of existing genetic stock on site, as opposed to an active genetic breeding program. The shadehouse was extended in 1992, along with some other infrastructural projects in the area of the Pump/Injector Building and the Shop Road maintenance yard, following the departure of the Butte County Sheriff Department from that area. Interest was renewed in existing *Camptotheca acuminata* stock in support of additional cancer research in the 1990s. Other initiatives were planned or pursued, such as native and riparian plant seed production studies, valley oak provenance studies, a yellow star-thistle predator study, and seed orchard studies for eucalyptus, pacific yew, Chinese maple, and chestnut. During this period, the Chico Genetic Resource and Conservation Center produced trees and plants for purposes of reforestation, wildlife recovery, watershed restoration, riparian habitat projects, oak woodland restoration, mine reclamation, and for campgrounds and interpretive areas.

Ultimately nursery operations were ceased altogether in 2004. Sometime after 2009, the Chico Genetic Resource and Conservation Center was again renamed the Chico Seed Orchard to reflect its present-day role as a repository of source-identified genetically improved conifer seed cones, but no longer a part of a research program. Maintenance of the orchards and irrigation system has become the primary on-site activity, with seed cone harvest still occurring at least once a year. Seed cones produced at the Chico Seed Orchard are sent first to the seed bank of the National Forest Genetics Laboratory in Placerville. From there, selected seeds are grown in the nearby nursery and thence disseminated to forests or silviculturists who request it for reforestation purposes. Some of these seedlings find their way back to Chico as well to supplement existing stock.



Figure 23: Seedlings recently field-planted at the present-day Chico Seed Orchard Administrative Site, with older transplants in the background. Shadehouse is on the right. Photograph taken 6/25/2019.

Recreation continues to be an active offering on-site, and many of the historic plant introductions of Frank N. Meyer and others have been labelled as part of the YCC-constructed nature trail around Comanche Creek. Local community partnerships have also been incorporated into the management of the property, with special-use permits for on-site facilities being granted in recent decades to the Butte County Sheriff's Department and to the Butte County Education Extension Office. At the same time, propagation facilities, storage facilities, and other facilities of previous iterations of the property have begun to be dismantled. A mobile office was removed from the east side of the Storage Building (Warehouse) between September 2015 and April 2016, and replaced by a K-line intermodal shipping container. Two mobile homes, or 'barracks,' were removed from the old residence/Site Host area between October of 2017 and September of 2018, and replaced with a privately owned recreational vehicle trailer. A cold-frame hoophouse to the south of the existing shadehouse, used for hardening-off young plants before field-planting, was removed between October of 2017 and May of 2018. A front-gabled fiberglass-and-aluminum greenhouse on a concrete foundation from ca. 1980 was removed from just east of the 1966 glass-and-aluminum greenhouse between September and December of 2018. Plans for continued removal of buildings and structures continue to this day.



Figure 24: Southern elevation of ca. 1980 greenhouse, removed from site between September and December of 2018. Photograph taken 9/14/2015. Photograph courtesy of Joel Little.



Figure 25: Eastern façade of fiberglass-and-aluminum greenhouse removed from site in late 2018. Photograph taken 8/20/2015. Photograph courtesy of Joel Little.



Figure 26: Cold-frame hoophouse, removed between October of 2017 and May of 2018, that was located south of the existing shadehouse. Photograph taken 8/20/2015. Photograph courtesy of Joel Little.



Figure 27: Two mobile homes removed from the old residence/Site Host area between October of 2017 and September of 2018. Photograph taken 8/20/2015. Photograph courtesy of Joel Little.

III. Resource Inventory

Boundary Description

The boundaries of the property include the land encompassed by the Chico Plant Introduction Garden, today’s Chico Seed Orchard Administrative Site (Forest Service Site #05-08-60-02), and the buildings and improvements located on that land encompassing approximately 209 acres. The property is delineated as approximately 3,250’ north-south and approximately 2,800’ east-west. This area includes 20 buildings, at least 28 above-ground structures, two potable water systems, three non-potable water systems including two industrial-grade wells and extensive irrigation lines, five septic systems, cultivated nursery fields, exotic landscape plantings, a nature trail, interpretive signage, seven picnic sites, six access roads, and two parking areas.

Feature Descriptions

The site of the Chico Plant Introduction Garden, today’s Chico Seed Orchard Administrative Site (Forest Service Site #05-08-60-02) consists of 20 buildings, nine of which date to the historic period (see Table 1). The Mendocino National Forest constructed or permitted construction of the other 11 buildings since 1980. The site of the Chico Plant Introduction Garden also consists of at least 28 structures, five of which are greater than 45 years old (see Table 2). Many of the buildings and structures constructed or installed since 1980 are modern in appearance, with aluminum siding and rooves, metal casement windows, and other common 21st-century building materials. The Chico Plant Introduction Garden also consists of ARS-era exotic plantings, which are shown in Figure 191.

Table 1. Building Construction/Relocation/Installation Dates

Building; Facility ID#	Construction/ Relocation/ Installation Date
Tankhouse (Pumphouse); #1640	ca. 1905
Office Building (Laboratory); #2006	1907
Office Annex Building; #2621	1921
Pumphouse at Creek (Butte Creek Pumphouse); #1645 (off-property)	1924
Saw/Paint Storage Building (Fumigation Storage); #2625	1928
Headhouse; #2814	1932
Barn; #2626	1940

Building; Facility ID#	Construction/ Relocation/ Installation Date
ROP Classroom (Utility Building/Garage); #1520	1941
Greenhouse; #2806	1966
Shadehouse; #2805	ca. 1981
Pump/Injector Building; #2629	ca. 1981
Shop/Storage Building (Old Search-and-Rescue); #12116	1987-1992
Day-use Area Toilet; #12115	1992
Tree Cooler 3 of 3 (Willamette Barn); #2637	Relocated ca. 1992-1995
Butte County Sheriff Search-and-Rescue Headquarters	ca. 1993
Mobile Office	Installed ca. 1994
O.C. Fire Cache; #2015	Installed ca. 1994
Storage Building (Warehouse); #2635	1997
Butte County Education Extension Office	Installed ca. 1998-2002
Open Garage; #2328	2005

Table 2. Structure Construction/Relocation/Installation Dates

Structure/Object; Facility ID#	Construction/ Relocation/ Installation Date
Irrigation Standpipes (at least 2)	1924-1957
East Well	1962
Old Residence/Site Host Area Well	1941-1974
North Well	1979-1980
South Well	1979-1988
Tree Cooler/Cold Storage Shed; #2636	ca. 1980
Supplemental Storage Cabinet	ca. 1980
Energy Control Box	ca. 1980
Stone Monument	1981
Informational kiosk	1984-1992
Vehicle Bridges (2)	ca. 1989
Gasoline Dispenser	Installed ca. 1987
Shop Road Storage Shed	Installed ca. 1987
Old Residence/Site Host Area Storage Shed	Installed ca. 1987
Grill	ca. 1990
Footbridge	pre-1994
Fire Cache Containers (2)	Installed ca. 1998-2002
Flammables and Combustibles Storage Container	Installed ca. 2003-2006
Shade Canopy	pre-2008
New Search-and-Rescue Storage Sheds (5)	Installed ca. 2013-2015
Shop Road K-Line Container	Installed ca. 2017-2018

Table 3. ARS-era Historic Exotic Plantings Date Ranges

Planting Site (names based on labels found in Figure 191)	Location	Date Range
A: 'Garden' inc. Chinese pine, fringe tree	headhouse building cluster; east and south of pumphouse (tankhouse)	ca. 1908-1935
F: bamboo	office building cluster	ca. 1909
K: ornamental pistachios, eucalyptus	West Orchard Road (formerly Pistacia or Pistache Avenue)	1910
G: tung trees, linden, hackberry, honeysuckle et al.	office building cluster	ca. 1910 et seq.
I: jujubes	north of Comanche Creek	ca. 1910-1973
J: pistachios, ornamentals, cedars, succulents	old residence/site host area	ca. 1910s et seq.
B: Meyer lemon et al.	headhouse building cluster: interior median of parking area at northwest corner of headhouse	ca. 1920s-1930s
C: 'Arboretum' inc. mother and father kiwifruit	west of headhouse building cluster, south of office building cluster	ca. 1930s-1973
D: 'Arboretum' inc. hollies, pistachios, <i>Camptotheca</i> et al.	south of office building cluster	ca. 1930s-1973
H: 'slough area'	west of office building cluster	ca. 1930s-1973
E: pistachios, plums, <i>Camptotheca</i> , grapes	south of south well	ca. 1931-1973
L: fruit trees	south of search-and-rescue headquarters building cluster	ca. 1940s-1973
M: plums	south of search-and-rescue headquarters building cluster	ca. 1940s-1973
N: kiwifruit et al.	Southeast corner of property	ca. 1938-1963

The land area on which the Chico Plant Introduction Garden, today's Chico Seed Orchard Administrative Site (Forest Service Site #05-08-60-02), is situated consists of 209 acres of federal land, 131 acres of which host source-identified genetically improved trees for the reforestation program of the Pacific Southwest Region. Species dedicated to this program present on property include ponderosa pine, Douglas-fir, rust-resistant sugar pine, Port Orford cedar, and Afghanistan pine.

Upon entering the site off of Cramer Lane, the old residence/site host area is immediately on the left (north) with a number of ARS-era historic exotic plantings, but no historic buildings remaining. A left-hand turn beyond the old residence/site host area north along West Orchard Road passes by historic ornamental pistachio trees planted as 'avenue trees,' past eucalyptus trees, and past some other ARS-era fruit trees and a plum orchard that are today obscured by competing vegetation. To the east of Orchard Road are non-historic ponderosa pine seed orchards. Beyond these features to the north are located the Butte County Sheriff Search-and-Rescue building, the O.C. Crew Office Building, and the Butte County Education Extension Office in a setting that could be described as akin to an industrial park.

A right-hand turn at the old residence/site host area brings one across a bridge into non-historic Douglas-fir and ponderosa pine seed orchards to the south and the recreational nature trail along Comanche Creek to the north of Center Lane. This area along Comanche Creek is vegetated by historic exotic plantings, many of which have been interpretively labelled. Further east along Center Lane, one arrives at the office building cluster on the north side of the road, a visitor parking area, a trailhead, and an information kiosk (see Figure 28). To the south of the office building cluster are more historic exotic plantings. Further east along Center Lane brings one to the headhouse building cluster on the south side of the road and the Shop Road maintenance yard along the eastern boundary of the property. These areas too are vegetated with historic exotic plantings. Over the bridge north of the Shop Road maintenance yard, one arrives at the Barn. A left at the Barn, heading west, brings one in a loop back toward the old residence/site host area. A paved nature trail generally makes a similar loop, but remains tighter in on Comanche Creek.

Remnant plum, pistachio, grape, and *Camptotheca acuminata* plantings from the ARS-era are located across the property in pockets, but for the most part the property is dominated by ponderosa pine and Douglas-fir seed orchards of the USDA Forest Service, and the irrigation lines and sprinkler system necessary for their maintenance. Small portions of the property remain in natural vegetation, such as those in the northeast and southeast corners that were cut off in 1957 by the Butte Creek and Little Chico Diversion Canal and Levee that generally runs along the eastern boundary of the property.

Office Building Cluster

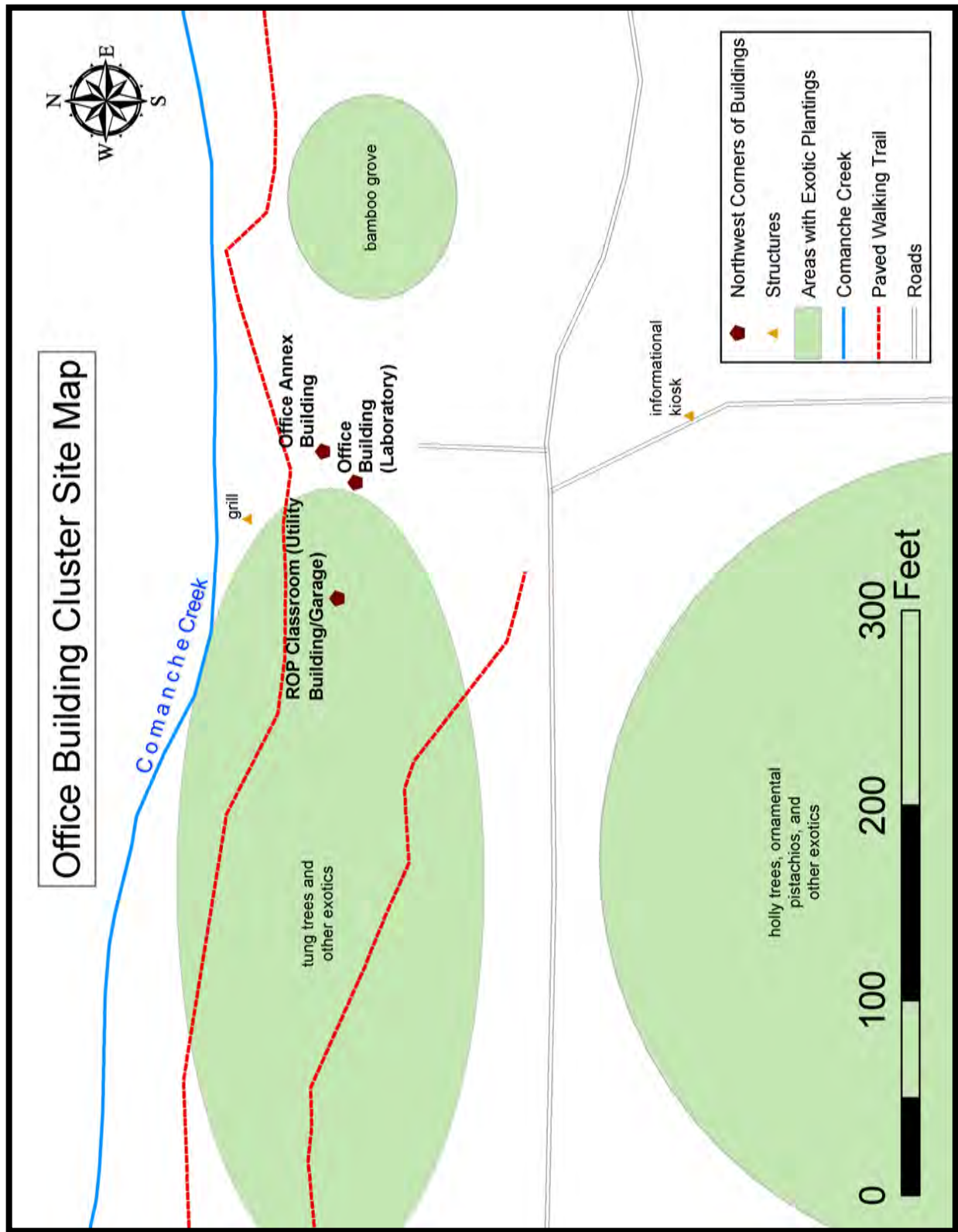


Figure 28: Site Map for the Office Building Cluster

Office Building (Laboratory); #2006

Architectural Style

The Office Building (Laboratory) of the Chico Plant Introduction Garden was under construction as of June 1907, according to an article from the *Chico Daily Record*.¹⁷¹ It has been modified a number of times through the course of the 20th century, with different modifications reflecting different architectural styles. In its original 1907 design, this building was characteristic of the craftsman style, hipped-roof form, with certain features indicative of the prairie style, American four-square form, particularly its focalized entryway façade, multi-paneled front door, and original hipped dormers. Despite these prairie features, the building's one-story floor plan, rafters exposed at the eaves, and wood-shingle cladding place it more securely in the craftsman style, less than 10% of which exhibited this hipped-roof form.¹⁷²



Figure 29: Original design of Office Building (Laboratory), photograph taken between 1907 and 1910, before planting of the linden tree in Figure 32. Note the side channel of Edgar Slough/Comanche Creek in foreground, south of building, prior to full channelization of the creek.

Perhaps as early as 1939, the south-facing front porch was enclosed for additional office space and a library.¹⁷³ In 1941, the southern elevation was radically re-designed to create an entirely new entryway and modernistic style. The south-facing front porch was removed in its entirety and replaced with interior space that extended beyond the original footprint of the building on two sides, creating additional room for office space and a library on the south side of the building, as well as a small wing on the southeastern corner of the building. During this remodel, the original south-facing focal entryway was covered up entirely and the main entrance to the building was converted to an elliptical (basket-handle) arched entry

¹⁷¹ Miller & Greenway, *History*, 2.

¹⁷² McAlester, *A Field Guide*, 567.

¹⁷³ Miller & Greenway, *An Evaluation*, 6.

portico on the southwestern corner of the building. The roof of the new addition was flat with a parapet, coping, and fascia at the roof line and the smooth exterior walls were finished in stucco with three embossed horizontal bands, evoking on the southern façade and at the arched entryway the art moderne variant of the modernistic style. This is the prevailing feeling of the building today, especially when entering through the arched portico, though an additional roof remodeling after 1991 removed the characteristic flat roof of the modernistic style.



Figure 30: The southern façade of the Office Building (Laboratory) and arched entryway to left. Note coping at the roof line and discoloration left by three embossed horizontal bands (since removed at time of photograph). Also note hipped dormer from original roof, visible above flat roof of addition. Photograph taken March 1, 1990.

Architectural Features

The Office Building (Laboratory) is a one-story wood-frame structure with a full basement and an attic. It is today roughly rectangular in shape with asymmetrical elements on all sides as a product of recurrent remodeling. Its original shape was square. The building's main façade is its arched entryway at the southwestern corner, though it was the south elevation with porch until 1941. The Office Building (Laboratory) is approximately 54' by 42' and approximately 2,200 square feet. Today the building has a hipped roof with a minor ridge and a medium pitch, and is sheathed with roofing felt and modern shingles overtopping plywood in many places, though the older tongue-and-groove boards and rounded stringers/false rafters are still visible under the eave projection of the basement access wing on the western elevation and of the back porch on the northern elevation (see Figure 31). Today's roof is lined with gutters that obscure reconstructed stringers/false rafters. It contains at least one vent, which is visible from the attic. Today's roof is topped with an antenna, exhausts, and a turbine.

The original roof of the building had a longer-projecting eave than the present-day one, with vents under-eave and hipped dormers centrally located on each elevation. The north-facing dormer was removed prior to 1991, and the other three were removed during a roof re-model after 1991.¹⁷⁴ The original roof of the southern addition was flat with coping and fascia at the roof line. This too was re-modelled after 1991, though the flat roof and coping are still present on the arched entryway. The original roof had a brick chimney projection and though the chimney is still present in the attic, it seems to have been truncated at the top during the re-model after 1991. The chimney no longer penetrates the roof, nor is it visible from the exterior of the building.



Figure 31: Older tongue-and-groove roof sheathing and rounded rafters under eave projection. Photograph taken 6/24/2019.



Figure 32: South elevation in March of 1990, showing chimney projection, central dormer, asbestos shingles, and no wooden ramp leading to entryway.

The foundation of the original footprint of the building is cement poured in multiple courses along the perimeter, while that of the southern and northern additions is cement poured into one mold along the perimeter of the additions. The walls of the building's original footprint are clad in wooden shingles. The southern addition is clad in stucco with three embossed horizontal bands (since removed on the southern elevation), evocative of the art moderne variant of the modernistic style. The back porch on the northern elevation is clad in stucco with no ornamentation.

The Office Building (Laboratory) has two entrances to its 1st floor, one entrance to its basement, and one entrance to a storage room accessed from the outside. The main entrance is on the southern elevation at the southwestern corner of the building and consists of a wooden door with modern hardware and a small single-paned window at eye-level. The door is located within an entry portico with three elliptical arches and three embossed horizontal bands at and just below eye-level. Walls are finished with stucco. The entryway was constructed in the art moderne variant of the modernistic style. The floor of the entryway was originally concrete steps, but has been covered over with a wooden accessible ramp. The back door on the north elevation leads into an enclosed hallway constructed around 1962. It is a wooden door with later 20th-century hardware and a large single-paned window. The door to the basement access is of tongue-and-groove boards with wooden moulding and hardware that likely dates to the original 1907 construction. The door to the outdoor storage area is wooden with five horizontal panels and no moulding. Its hardware likely dates to the 1st half of the 20th century. Historically there was a front porch on the south elevation, but it has since been reconstructed as interior office space. There was also a back

¹⁷⁴ Miller & Greenway, *An Evaluation*, 5.

staircase that was enclosed in 1962 to create a back hallway. At that time, the staircase was re-oriented to the north toward the Office Annex Building and a wooden back deck was planned to essentially connect the Office Building (Laboratory) directly to the Office Annex Building. Apart from the southern addition, most 1st-floor windows on the building are original single-paned double-hung wooden sashes with wooden sill on the bottom, unornamented wooden cornice on top, and wooden moulding on three sides. They are fairly non-descript and are consistent with the early 20th-century prairie American foursquare and craftsman styles. Most basement windows are double-paned, open inward, and are fastened with carved wooden window-stops, one prime example of original craftsmanship that is still present on the building.



Figure 33: Typical 1st-floor windowframe of original building footprint. Photograph taken 6/24/2019.



Figure 34: Basement-level window with carved wooden window-stop. Photograph taken 6/24/2019.

The western elevation, which contains the primary entrance, has two windows on the first floor that are consistent with the description above, and two windows on the basement level that are consistent with the description above. Two additional original windows are located on the western elevation on the façade of the basement access wing. These two windows are smaller and deeper-set than the 1st floor windows, but otherwise exhibit similar characteristics as described for 1st-floor windows. The northern elevation has five windows in a series, though not as a contiguous ribbon. Otherwise they are consistent with other 1st-floor windows as described above. A third window on the northern façade of the basement access wing has been enclosed in the early 20th-century one-room addition described below. It is now boarded-up, but otherwise exhibits the same characteristics as the other two windows on the basement access wing. There is also a small one small window on the 1962 addition to the northern elevation (described below). It is aluminum-framed and horizontally sliding with vertical panes, the only of this more modern type on this building. The eastern elevation has three 1st floor windows, two of which belong to the original 1907 footprint, and one of which belongs to the 1941 southern addition. It also has three basement-level windows belonging to the 1907 footprint. Of the two original-footprint 1st-floor windows, one still frames two single-paned double-hung sashes, while the other has been replaced with one larger modern single pane with sashes removed though the original moulded frame is still intact. The three basement-level windows are consistent with the description above, though at least has been boarded up. The window to the southern addition, as well as three windows on the southern elevation, are equipped with two double-hung sashes, each with two horizontal panes separated by a wooden muntin. These

windows are also equipped with wooden-framed screen windows, removable from the exterior. This window, and those on the southern elevation, are more characteristic of the ranch style of domestic architecture than with the modernistic style that is represented by the southern addition's other features, described below. The southern (road-side) elevation has three windows consistent with the description just given. These three windows are much more widely spaced than those of the original 1907 footprint of the building. They are accompanied by four evenly spaced vents below the windows, as well as utility hook-ups and a flagpole on the southern (road-side) elevation.

Other features of this building worth mentioning include the storage room located in the basement of the building, and the laboratory-style vertically sliding window in its interior. The door of the storage room is embossed with the following: "PACIFIC HOWE SPEC NO 6504 [line break] PAT^D. JAN. 15 1870." It is rectangular in shape and composed of rough-faced cinder blocks, very similar to those used on construction of the original pumphouse. At various times while administered by the Agricultural Research Service (ARS), this basement housed seed germination experiments and equipment.¹⁷⁵ This utilitarian structure, likely original to the 1907 construction of the building, represents the original function of the building to test and store genetic material of exotic plants, many of which could require a highly controlled environment for short- or long-term storage.

The sliding window in the interior of the Office Building (Laboratory) is located between the office (today's entry room/visitor display room) and the laboratory (today's central common area). It would have been used for passing analytical samples between the office and the laboratory in a controlled fashion. The trim matches other interior doors dating to the 1941 remodeling of the building, and represents an earlier function of the building to investigate samples of exotic plant material for its histological and biochemical properties.



Figure 35: Basement storage room, patented 1870, constructed ca. 1907. Photograph taken 6/24/2019.



Figure 36: Vertically sliding interior window between office and laboratory. Built in or soon after 1941. Photograph taken 6/24/2019.

¹⁷⁵ Miller & Greenway, *An Evaluation*, 3-4.

Landscape Setting

The office building (laboratory) occurs within the setting of the property's 30-acre historic core, vegetated by eight areas of ARS-era historic exotic plantings that comprise a common aesthetic theme and a cohesive design as a rural historic landscape.

In the near vicinity of the Office Building (Laboratory) occur a number of historic plantings of exotic trees dating to the ARS era. These include ornamental pistachios, tung trees, holly trees, Maack's honeysuckle, Russian hackberry, and directly in front of the main entrance to the building a linden tree collected by Frank N. Meyer from the Republic of Georgia in 1910. On the building's eastern side is a well-established grove of bamboo that likely dates to the 1909 importation of Chinese and Japanese varieties collected by William Hill.¹⁷⁶ This particular bamboo grove is shown as already well-established on a feature map of the property from December of 1924.

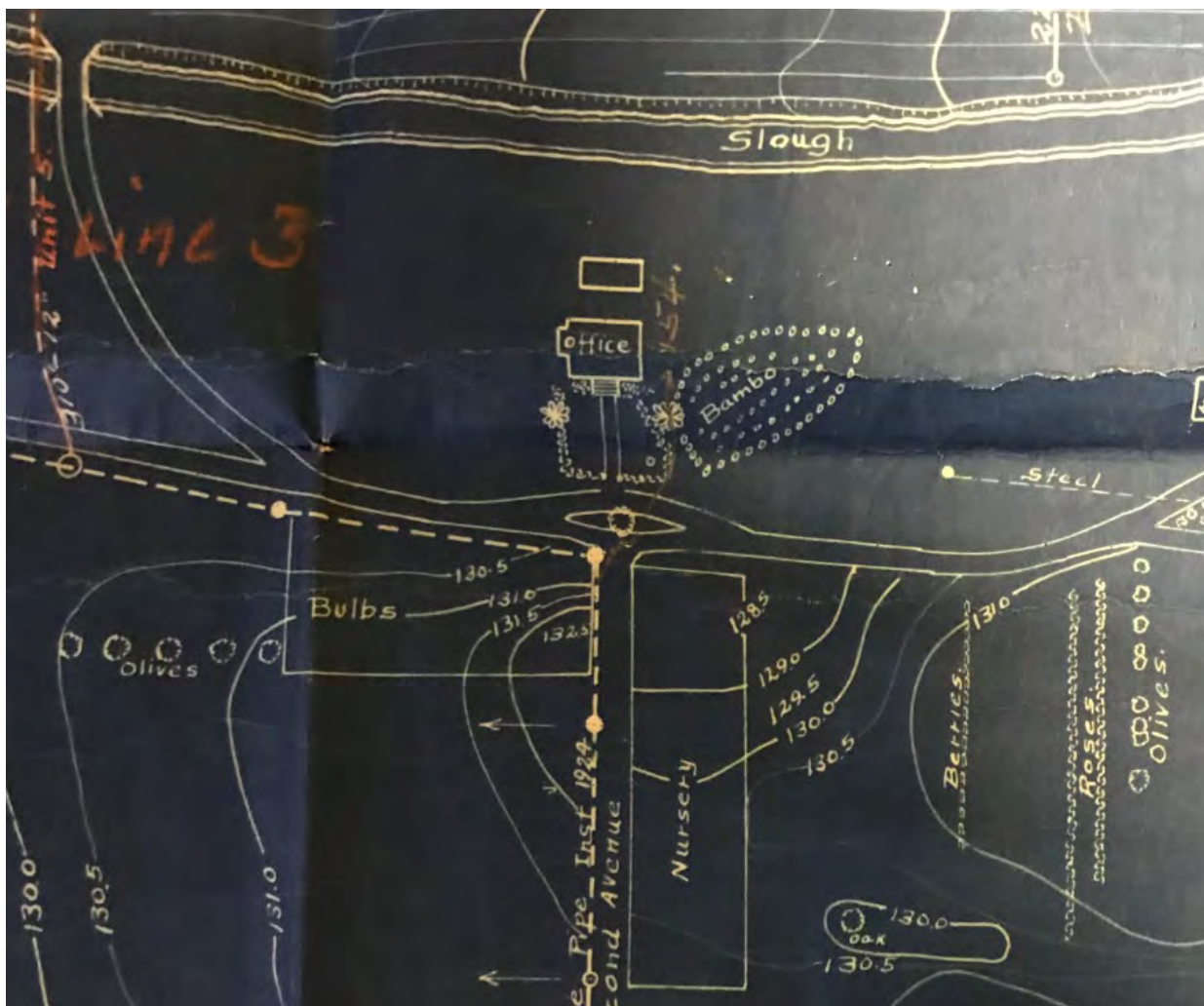


Figure 37: Detail of a survey map from December of 1924, showing pre-modification Office Building (Laboratory) and Office Annex Building, as well as the grove of bamboo that likely dates to 1909.

¹⁷⁶ "Bamboo Shipped for Experiments," *The San Francisco Call*, January 17, 1909, 31.

Other features in the vicinity of the office building/lavatory include a paved hiking trail that identifies a number of the exotic plantings; Comanche Creek to the north; a grassy lawn with a flagpole to the south; Center Lane, the primary access road to the main building cluster of the property beyond the lawn to the south; and an informational kiosk and visitor parking area past the access road to the south. A minor channel of Comanche Creek ran south of the building as of 1907, but it has since been infilled and the grounds levelled by means of a retaining wall composed of railroad-tie cribbing. One very large oak tree has been flush-cut to the south of the building. The stump is still visible on the grassy southern lawn. The Office Building (Laboratory) is located approximately 18' south of the Office Annex Building and 20' east of the utility building.

Modifications

The Office Building (Laboratory) has undergone multiple and recurrent modifications on at least five occasions, two of which dramatically altered the style and feeling of the building. The original floorplan of the building included six interior rooms and a front porch on the southern elevation. Rooms included the main laboratory room, an office, a histology room, a 'Kjeldahl' room, a dark room, and a wash room. One early alteration that occurred between 1925 and 1936 involved the addition of a one-room lavatory (now a storage room), accessed from the outside, at the northwestern corner of the building. This addition necessitated the construction of a transitional shed roof with plywood boarding under the eave, as opposed to tongue-and-groove, but otherwise utilized wooden-shingle cladding and a five-paneled wooden door, in keeping with materials and design of the original 1907 building.



Figure 38: Early one-room addition at northwestern corner of building. Photograph taken 6/24/2019.



Figure 39: Five-paneled wooden door of one-room addition. Note at left wooden shingles at original northwestern corner of building where they intersect incongruously with wooden shingles of addition. Photograph taken 6/24/2019.

The south-facing front porch may have been enclosed as early as 1939, but it was the 1941 remodeling of the southern elevation of the building, discussed in the Architectural Style section above, that radically altered the design, style, and feeling of the façade most visible to the public, since it is the façade that faces the present-day access road. From the new arched entryway, it put into juxtaposition two widely disparate architectural styles, craftsman and modernistic, and by removing the south-facing pillared porch and focal entryway, it relegated the original craftsman style to the background. The original south-facing front steps are still visible from a crawl-space at basement-level, but are entirely obscured from the

exterior. On the interior, this re-model added office space and a library within the southern addition, along with the installation of the vertically sliding laboratory window.



Figure 40: Front steps and focal entry of original craftsman design of Office Building (Laboratory). W.J. Everett Morrow, then Superintendent of the Plant Introduction Garden, at upper left. Photograph taken ca. 1936



Figure 41: Today's main entryway at southwestern corner of building, where art moderne form of 1941 design is most evident today. Photograph taken 6/24/2019.

In 1962, plans were made to expand the original back (north-facing) entrance into an enclosed restroom, today a hallway, and to re-orient the back stairs to more functionally connect the Office Building (Laboratory) with the Office Annex Building, 18' to the north. In its original floorplan, these back stairs had been oriented to the west, before the Office Annex Building was built. Paved walkways and an open-air back deck were also likely added at this time, though the back deck was reconstructed again sometime after 1977. While the older tongue-and-groove boarding under the eave projection of this addition has been retained to the present day, the cladding of the new addition is stucco, though without the ornamentation of the 1941 re-design. The window of the new addition is aluminum-framed and horizontally sliding, the only of this post-1950 type on this building.



Figure 42: Northeastern corner of the building, showing eastern elevation of stucco-clad restroom/hallway addition. Photograph taken 6/24/2019.



Figure 43: 1960s-era aluminum-framed horizontally sliding window. The only of this post-1950 type on the building. Photograph taken 6/24/2019.

At some point before 1975, the north-facing dormer was removed, perhaps during the 1962 addition, and the ceiling was lowered from what was once a higher-pitched ceiling.¹⁷⁷ At some point after 1920, the roof sheathing was converted from wooden shingles to asbestos shingles, and a number of basement windows were boarded up.

In 1980, following transfer of the property from the Agricultural Research Service to the Forest Service, plans were made to convert the Office Building (Laboratory) into a visitor information center, plans which were partially realized through the installation of an interior glass showcase and ultimately the paved hiking trail along Comanche Creek which was built beginning in 1984. Also in 1980 or soon thereafter, the sewage system for the building was upgraded and modernized.

Around 1991, plans were implemented to re-roof the entire building, which not only removed the remaining hipped dormers from the building, a feature characteristic of the American foursquare form of prairie domestic architecture, but also removed the craftsman-style exposed rafters and tongue-and-groove boarding from the eave projections. It also shortened the eave projections and truncated the brick chimney so that it would no longer project above the roof. This re-model also removed the flat roof, pediment, coping, and fascia of the southern addition, features that had been characteristic of the art moderne variant of modernistic domestic architecture.

A final alteration conducted between 1991 and 2015 is that of the addition of a wooden accessible entry ramp. This ramp does not remove, but obscures the concrete stairs of the 1941 art moderne arched entryway. Today's interior space consists of nine rooms: a visitor display room, a shared office space, a common central room, three individual offices, a wash room, and a bathroom. The Office Building (Laboratory) is today primarily used for office space and storage.

Integrity

This building, as shown below from June 2019, does not retain integrity of design or feeling of either of the styles of architecture which it had evoked at earlier periods of its history. It retains only partial integrity of materials and workmanship, as so many of its component parts have been modified, removed, or obscured in manners that were not consistent with original materials or workmanship. Additionally, those aspects of materials and workmanship that have been preserved are not so singular in form that they cannot also be found in more intact contexts in other contemporaneous examples. This building does, however, retain integrity of location, setting, and association with significant trends in American agriculture that have contributed to regional and national industries, and to the sciences of plant biology, crop husbandry, and horticulture.¹⁷⁸ As the property's original primary office building and laboratory, this building was an essential component in both genetic research and experimentation, and administration of the facility as a whole. These contributions are still borne out by distinctive features of the Office Building (Laboratory), such as the storage room located in the basement of the building (Figure 35), the laboratory-style vertically sliding window in the building's interior (Figure 36), and the seemingly intact laboratory center table, designed in 1931. This strong association with significant trends in American agriculture, as well as the building's intact setting, surrounded by a number of ARS-era historic exotic plantings within the property's historic core, lends the building a preponderance of integrity.

¹⁷⁷ Miller & Greenway, "An Evaluation," 4-5.

¹⁷⁸ Jones & Stokes Associates, Inc., "Chico Plant Introduction Garden." 7.



Figure 44: Western elevation, with primary entrance and basement access wing. Corner of utility building on far left. Photograph taken 6/24/2019.



Figure 45: Accessible wooden ramp, built after 1991, leading to the main entrance at southwestern corner of building. Photograph taken 6/24/2019.



Figure 46: Northern elevation. Photograph taken 6/24/2019.



Figure 47: Wooden back porch, north of building, connecting Office Building (Laboratory) on right to Office Annex Building on left. Photograph taken 6/24/2019.



Figure 48: Eastern elevation, with 1941 addition on left and 1962 addition on right. Photograph taken 6/24/2019.



Figure 49: Southern road-side elevation with flagpole at center. Stylistic modification as a product of the 1991 roof re-modeling is most evident from this elevation. Photograph taken 6/24/2019.



Figure 50: Original brick chimney, now truncated and no longer functional, but still accessible via an access chute in the ceiling of the present-day restroom. Photograph taken 6/24/2019.



Figure 51: Original concrete front steps up to the pre-1941 front porch of the southern elevation. These steps are now enclosed by the concrete perimeter foundation of the 1941 southern addition. Photograph taken 6/24/2019.



Figure 52: 1941 concrete steps leading to art moderne arched entryway. These steps are now obscured beneath the wooden accessible ramp, installed after 1991. Photograph taken 6/24/2019.

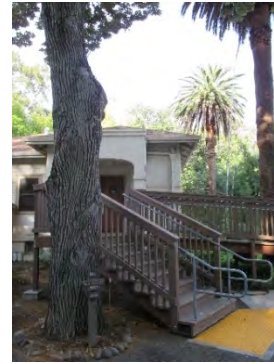


Figure 53: Linden tree collected by Frank N. Meyer from the Republic of Georgia in 1910. Planted in front of today's main entrance to Office Building (Laboratory). Palm trees along southern elevation also visible to right. Photograph taken 6/24/2019.



Figure 54: Bamboo grove with eastern elevation of Office Building (Laboratory) in background. Photograph taken 6/24/2019.



Figure 55: Large flush-cut stump of historic tree in front-yard area of Office Building (Laboratory). Photograph taken 6/24/2019.

Office Annex Building; #2621

Architectural Description and Setting

Constructed in 1921, the Office Annex Building is characteristic of the craftsman style, front-gabled roof form. It is one story and wood-framed, with a rectangular-shaped plan. The building's main façade is oriented towards the west. The Office Annex Building is located approximately 18' north from the Office Building (Laboratory). The Office Annex Building is 16' by 30', and approximately 480 square feet. It has a front-gabled roof with a low pitch and is sheathed with shingles atop tongue-and-groove boards on its south side and atop plywood on its north side. The roof features unornamented exposed rafters below wide side eaves. The front and back gables do not have any ornamentation or exposed purlins. The roof contains a gutter only on south side of the building, as well as a modern air-conditioning unit and a light fixture at the peak of the eastern gable. The building's foundation consists of concrete pier blocks atop the ground surface. The building's wooden joists are fitted atop thick wooden shims that sit atop the concrete pier blocks. The building's walls are clad with wooden shingles that are nearly identical to those that clad the original footprint of the adjacent Office Building (Laboratory).



Figure 56: Original tongue-and-groove boards atop exposed rafters under the eave projection of the southern side of the Office Annex Building. Photograph taken 6/24/2019.



Figure 57: Thick wooden shim atop foundation of concrete pier block. Photograph taken 6/24/2019.

The annex has two entrances. The main entrance is on the western elevation and consists of three steps leading up to a wooden double-door with five horizontal panels on each side of the double-door. Above the double-door is mounted the number "6." Flanking the double-door to either side is a double-hung window with four panes separated by wooden muntins on each sash. The window frames are simple and unornamented with wooden sills at the bottom. An attic vent is located below the peak of the front gable. The main entrance is very symmetrical and presents a highly focal visual effect. The southern elevation contains the second entrance, a modern door installed after 1977, accessed by a wooden back deck that physically connects the southern elevation of the Office Annex Building to the northern elevation of the adjacent Office Building (Laboratory) (see Figure 47). This second entrance is flanked to the right by a window as described above. The southern elevation also contains two window ribbons of five panes apiece that open outward from the bottom. The two window ribbons are separated by a wooden mullion. They have simple wooden frames and a simple wooden sill, and are more characteristic of the ranch style than of the craftsman style. The northern elevation contains another pair of window ribbons separated

by a wooden mullion, as well as a double-hung window to the left of the window ribbons. The eastern elevation does not contain any doors or windows, though it does have an attic vent near the peak of its gable, as well as a metal patch that may have once served as the exit for a stovepipe exhaust vent. The eastern elevation also contains an electrical line that connects to a modern light fixture that has been attached to the peak of its gable.



Figure 58: Front entrance to Office Annex Building, consisting of five-paneled wooden double-door. Photograph taken 6/24/2019.



Figure 59: Window ribbons characteristic of the ranch style of domestic architecture, located on the northern elevation of the Office Annex Building. Photograph taken 6/24/2019.

Other features of note that are present on the Office Annex Building include a pre-1940 ceramic insulator for an early electrical line into the Office Annex Building. The insulator is screwed onto an exposed rafter at the southeastern corner of the building. Another feature of note is what appears to be the original hardware that is still affixed to the front door.



Figure 60: Pre-1940 ceramic insulator screwed into exposed rafter of Office Annex Building. Photograph taken 6/24/2019.



Figure 61: One example of original hardware of front door of Office Annex Building. Photograph taken 6/24/2019.

The setting/landscaping around the Office Annex Building is the same as that of the Office Building (Laboratory). See Landscape Setting section of the description of the Office Building (Laboratory) above. A pedestrian bridge over Comanche Creek is located just northwest of the Office Annex Building, as well as the wooden abutments of a previous bridge over the creek that shows on a site map from 1961. A double-sided grill composed of a mortared-river-cobble exterior and fire-brick interior is also located

beside the creek in the vicinity of the Office Annex Building. A picnic table is located just east of the building as well.

Modifications

The Office Annex Building has been modified at a modest level on separate occasions. Originally referred to as the laboratory annex, presumably its use was directly connected to that of the adjacent laboratory. It was originally a two-room building, the front room corresponding with the ribbon windows and the back room corresponding with the double-hung windows toward the building's eastern side. At some point, the original tongue-and-groove boards of the north side of the roof were replaced with plywood, and the roof shingles were likely replaced at this time. The exposed rafters were retained under the eave projection on the north side, and generally this alteration does not draw considerable attention or detract from the overall craftsman style of the building. At some point, the building was rewired for electric and heating, prompting the removal of all but one ceramic insulators and the stovepipe exhaust. There are exterior hardware brackets on the top frame of the double-hung windows as well, indicating that some feature has been removed from those windows.



Figure 62: Peak of western (front) gable, showing under-eave tongue-and-groove boarding to the south (right), and plywood boarding to the north (left). Photograph taken 6/24/2019.



Figure 63: Detail of eastern elevation siding where once may have been an exit for a stovepipe exhaust. Photograph taken 6/24/2019.

Likely contemporaneous with the 1962 modifications to the Office Building (Laboratory), concrete walkways were laid in to connect the Office Annex Building to the Office Building (Laboratory) and to the ROP Classroom (Utility Building/Garage). After the property was acquired by the USDA Forest Service in 1974, plans were made to remodel aspects of the Office Building (Laboratory) and of the Office Annex Building. Sometime after 1977, the wooden back deck on the southern side of the building was constructed, along with the small front staircase on its western side. Around the same time, the secondary entrance was installed on the southern elevation where previously there had been no entrance. Sometime after this, the interior was converted from two rooms to one room. The walking trail along Comanche Creek comes within feet of the northern side of the building. This trail was constructed by Youth Conservation Corps members in 1984 and later paved. As of 1994, the Office Annex Building was referred to as a classroom. As of 2003, it was referred to as a meeting room. Today it is referred to as a conference room.

Integrity

The building, as shown below from June 2019, retains integrity in a number of categories: location, design, setting, materials, workmanship, feeling, and association. Though minor alterations have been made to the building’s design and materials, nevertheless those alterations were either conducted using materials that mimicked the original or do not present a focal point of attention that detracts from the historic feeling of the building. Though certain aspects of setting have also been altered, such as installation of a paved walking trail and the construction of the utility building in 1941, nevertheless those exotic plantings that are still present, as well as adjacency to the Office Building (Laboratory), help to preserve a strong sense of setting. This building retains integrity in all aspects of location and association with significant trends in American agriculture that have contributed to regional and national industries, and to the sciences of plant biology, crop husbandry, and horticulture.¹⁷⁹



Figure 64: Western elevation and primary entrance of Office Annex Building. Office Building (Laboratory) on the right. Photograph taken 6/24/2019.



Figure 65: Southern elevation of Office Annex Building with back deck. Photograph taken 6/24/2019.



Figure 66: Eastern elevation of Office Annex Building. Photograph taken 6/24/2019.



Figure 67: Northern elevation of Office Annex Building with paved walking trail in foreground. This perspective readily reveals the original two-room design of the building. Photograph taken 6/24/2019.

¹⁷⁹ Jones & Stokes Associates, Inc., *Chico Plant Introduction Garden*, 7.



Figure 68: Modern door on southern elevation of Office Annex Building, installed sometime after 1977. Window is original. Photograph taken 6/24/2019.



Figure 69: Underside of Office Annex Building, showing wooden beams atop a wooden shim atop a concrete pier foundation. Photograph taken 6/24/2019.



Figure 70: Interior view of Office Annex Building meeting room. Photograph taken 6/25/2019.



Figure 71: Close-up detail of post-1962 concrete walkway construction. Photograph taken 6/24/2019.



Figure 72: Paved walking trail along Comanche Creek with trailhead in vicinity of Office Building (Laboratory), Office Annex Building, utility building cluster. Photograph taken 6/24/2019.



Figure 73: Maack's honeysuckle, one of the many exotic trees planted along Comanche Creek in the vicinity of the Office Annex Building. Photograph taken 6/25/2019.

ROP Classroom (Utility Building/Garage); #1520

Architectural Description and Setting

Constructed in 1941, contemporaneous with the re-designed southern addition of the Office Building (Laboratory), the ROP Classroom (Utility Building/Garage) is characteristic of the art moderne variant of the modernistic style. The ROP Classroom (Utility Building/Garage) is one story, with poured cement walls finished in stucco and a rectangular -shaped plan with a wood-framed exterior shed added on to the northwestern corner of the building. The building's main façade is oriented towards the south. The ROP Classroom (Utility Building/Garage) is located approximately 20' west from the Office Building (Laboratory).

The ROP Classroom (Utility Building/Garage) is approximately 22' by 40' and approximately 880 square feet, with the exterior shed adding an additional approximately 64 square feet to today's building footprint. The building has a corrugated sheet metal roof with a low pitch that drains in only one direction to the north (riverside). The sheet metal roof sits directly atop the exterior shed's previous low-pitched roof with plywood boarding. Both of these rooves contain unboxed eaves with exposed rafters. There is a gutter and downspout only on the northern (riverside) elevation. Neither of these rooves are original, as they both extend over the wood-frame exterior shed that was added on to the building sometime after 1979. The original roof was likely flat just as was the 1941 southern addition to the Office Building (Laboratory). Other stylistic similarities between the ROP Classroom (Utility Building/Garage) and the southern addition of the Office Building (Laboratory) include the ROP Classroom (Utility Building/Garage)'s original parapets on three elevations: west, south, and east. The ROP Classroom (Utility Building/Garage) also exhibits coping and an embossed horizontal fascia just below the coping. There are no visible roof projections on the ROP Classroom (Utility Building/Garage), though the southern elevation does contain five tubular holes just below the roof's coping and fascia, originally designed either as drainage spouts for the flat roof or to allow fumes to escape the building's interior in the absence of roof projections. The building's foundation consists of an aggregate concrete slab with pebble inclusions. The building's walls are clad with stucco and exhibit three embossed horizontal bands at eye level on the western, southern, and eastern elevations. The stucco cladding and horizontal bands are identical to those found on the eastern and western elevations of the southern addition of the Office Building (Laboratory).



Figure 74: View of two roof construction periods atop exterior shed, built sometime after 1979, on northern side of ROP Classroom (Utility Building/Garage). Photograph taken 6/24/2019.



Figure 75: Southern eave projection of ROP Classroom (Utility Building/Garage), with tubular hole below. Photograph taken 6/25/2019.



Figure 76: Western elevation of ROP Classroom (Utility Building/Garage), showing original parapet, coping, fascia, and three embossed horizontal bands. Photograph taken 6/24/2019.



Figure 77: Aggregate concrete slab foundation with pebble inclusions. Photograph taken 6/24/2019.

The ROP Classroom (Utility Building/Garage) has two pedestrian entrances. The added-on exterior shed also has two entrances. The main entrance to the ROP Classroom (Utility Building/Garage) is on the southern elevation and consists of modern hardware, a two-paned vertically sliding eye-level window with aluminum frame (post-1950), and two vertical panels below the window. Previously, the southern elevation had three bay-door entrances for vehicles, the westernmost of which has been converted to the main pedestrian entrance. These bay doors have been enclosed by wooden vertical drop-siding, similar to that found as cladding on the exterior shed of the building. The eastern elevation contains the building's original pedestrian door, connected by a walkway to the Office Building (Laboratory). It is the same style of door as that found on the southern elevation, except that the window is framed with moulding instead of aluminum. The exterior shed contains two identical double-doors on its western and eastern elevations. Both open outwards and are composed of wooden drop-siding. Neither are functional today, the western one fastened closed by metal hardware and the eastern one obstructed by vegetative debris. It is uncertain if the interior of this shed has a door that leads into the interior of the main part of the building. There are no windows on the southern elevation, except for the one embedded in the door as described above. There is one window which has been boarded up on the northern elevation of this building. The eastern and western elevations of this building contain two windows apiece, both of which have been boarded up on the western elevation. Of the two windows on the eastern elevation, the frame of the northernmost one is intact, though the bottom pane is boarded up. The southernmost window of the eastern elevation is the only original window on the building that is still functional. It is a single-paned, double-hung window with a simple wooden frame and a curvilinear motif at the bottom of the upper sash. This is the only visible instance remaining on this building of this kind of motif. There are also an electrical utility hook-up and a light fixture on the eastern elevation, a light fixture on the southern elevation, floor vents on the western and northern elevations, and an electrical circuit-breaker box on the northern elevation of the building.



Figure 78: The only remaining functional window on the eastern elevation of the ROP Classroom (Utility Building/Garage). Note curvilinear motif at bottom of upper sash. Photograph taken 6/24/2019.



Figure 79: Boarded-up window on the western elevation of the ROP Classroom (Utility Building/Garage). Photograph taken 6/24/2019.

The setting/landscaping around the ROP Classroom (Utility Building/Garage) is the same as that of the Office Building (Laboratory). See Landscape Setting section of the description of the Office Building (Laboratory) above. Additionally, an asphalt accessible parking area is located just to the building's south, and a picnic table is located near the building's southwest corner. The ROP Classroom (Utility Building/Garage) is located 20' west of the Office Building (Laboratory).

Modifications

The ROP Classroom (Utility Building/Garage) has been modified at least once, and has received other minor alterations on several occasions. Source documents refer to the building as the 'utility building' until a 1979 site map that refers to it as a 'garage.' At some point between 1979 and 1990, the exterior wood-frame shed was added on to the northwestern corner of the building. Likely at or around the same time (given similar materials employed), the three bay doors on the southern elevation of the building were enclosed in wooden drop-siding very similar to that used on the exterior shed, and a pedestrian door was installed on the westernmost enclosed bay. Also likely around the same time (given similarities in door design), the door on the eastern elevation of the building was replaced and a new lintel piece added above the threshold. Though these alterations did not affect the architectural style of the building, they did remove the functional design of the building from that of a garage to that of a storage room, though a site map from 2003 continues to refer to the building as a 'garage.' More recently, the building has been used as a classroom. It is today used primarily for storage. Other more recent alterations to the building include the installation sometime between 1990 and 2015 of a corrugated sheet metal roof that downslopes to the north and the boarding-up of all but one-and-a-half windows sometime before 2015. The south side of the building has also been recently paved with asphalt and a picnic table has been installed.

Integrity

This building, as shown below from June 2019, retains integrity of location, setting, and association. It retains a degree of integrity in terms of design, materials, workmanship, and feeling.

As mentioned above, alterations that occurred after 1979 removed the functional design of the building from that of a garage to that of a storage room, altering some of the building's materials as well. These alterations, however, did not compromise the original aesthetic design of the building's art moderne architectural style, which was intended to complement the 1941 re-designed southern addition of the

Office Building (Laboratory). This complementary association to the faux-Mediterranean arched portico entryway of the Office Building (Laboratory) remains intact today.

Elements of the building's materials have been altered over time, especially in terms of the building's doors and windows, as described above, though a preponderance of original materials remain intact. Though the building is today fitted with a corrugated sheet metal roof that downslopes to the north, it is likely that the original art moderne flat roof is still intact below today's downsloped roof. Workmanship in the form of aesthetic design elements of the art moderne style, such as the building's parapet, coping, fascia, and three embossed horizontal bands, are also intact.

A number of exotic plantings surrounding the building, especially tung trees on its north side, are still present, as is the 1941 re-designed southern addition of the Office Building (Laboratory) with which this building is associated. While the building's generally dilapidated appearance is a detractor, the ROP Classroom (Utility Building/Garage) is nevertheless able to convey an aesthetic and historic feeling of the property in its 1940s form. This feeling is augmented as well by the building's intact association and setting within the property's historic core.



Figure 80: Southern (roadside) elevation of the ROP Classroom (Utility Building/Garage). Photograph taken 6/24/2019.



Figure 81: Eastern elevation of the ROP Classroom (Utility Building/Garage), originally the primary pedestrian access. The center window is the only window left on the building with both intact sashes. Photograph taken 6/24/2019.



Figure 82: Western elevation of ROP Classroom (Utility Building/Garage) with boarded-up windows and exterior shed at left. Photograph taken 6/24/2019.



Figure 83: View of the ROP Classroom (Utility Building/Garage) from the portico of the Office Building (Laboratory). Photograph taken 6/26/2019.



Figure 84: View of exterior shed from the east. Chinese tung trees in the foreground. Photograph taken 6/24/2019.



Figure 85: Western double-door entrance to exterior shed. Photograph taken 6/24/2019.



Figure 86: Enclosed vehicle bay door on southern elevation of ROP Classroom (Utility Building/Garage). Note wooden drop-siding used and its similarity to drop-siding on exterior shed. Photograph taken 6/24/2019.



Figure 87: Retaining wall of railroad-tie cribbing. Utility building on left. Office Building (Laboratory) in background. Photograph taken 6/24/2019.



Figure 88: Southern elevation of ROP Classroom (Utility Building/Garage) in 1990, after enclosure of vehicle bay doors and before addition of sheet metal roof. Photograph taken 3/1/1990.



Figure 89: A 'China wood oil tree,' a.k.a. tung tree, many of which are found in the vicinity of the ROP Classroom (Utility Building/Garage). Photograph taken 6/24/2019.

Grill

Constructed ca. 1990, and located on the southern bank of Comanche Creek, just west of the present-day footbridge, is a double-sided grill. It is located in the vicinity of the Office Annex Building. The grill's landscape setting is the same as that of the Office Annex Building. It measures 4' 9" by 3' 3". It is composed of a mortared-river-cobble exterior façade and fire-brick interior surfaces. It is capped with concrete. Though in some disrepair, the grill retains integrity of location, design, setting, materials, workmanship, feeling, and association. The grill does not date to the property's period of significance (1904-1973) and is therefore a non-contributing feature to the property's potential historic district.



Figure 90: Two-sided grill with fire-brick interior with Comanche Creek in the background. Photograph taken 6/24/2019.



Figure 91: Side view of two-sided grill, showing mortared river-cobble construction. Photograph taken 6/24/2019.

Informational Kiosk

Constructed sometime between 1984 and 1992, and designed by landscape architect Fred Bell, the informational kiosk is located across Center Lane from the Office Building (Laboratory), and directly east of the visitor parking lot in that area. It occurs within the same landscape setting as the Office Building (Laboratory). It is a three-sided post-and-beam kiosk, composed of redwood and plywood, with redwood stringers on which bulletin boards are affixed. Not including its roof overhang, it measures 3' 8" post-to-post with 6' 8" of clearance. Its roof contains cedar shingles atop plywood sheeting, with an unboxed redwood fascia and exposed redwood joists. Though it does not date to the property's period of significance, the informational kiosk retains integrity of its original location, design, setting, materials, workmanship, feeling, and association.



Figure 92: Informational kiosk next to visitor parking across access road from Office Building (Laboratory). Photograph taken 6/25/2019.



Figure 93: Informational kiosk with visitor parking area in the background. Photograph taken 6/25/2019.

Headhouse Building Cluster

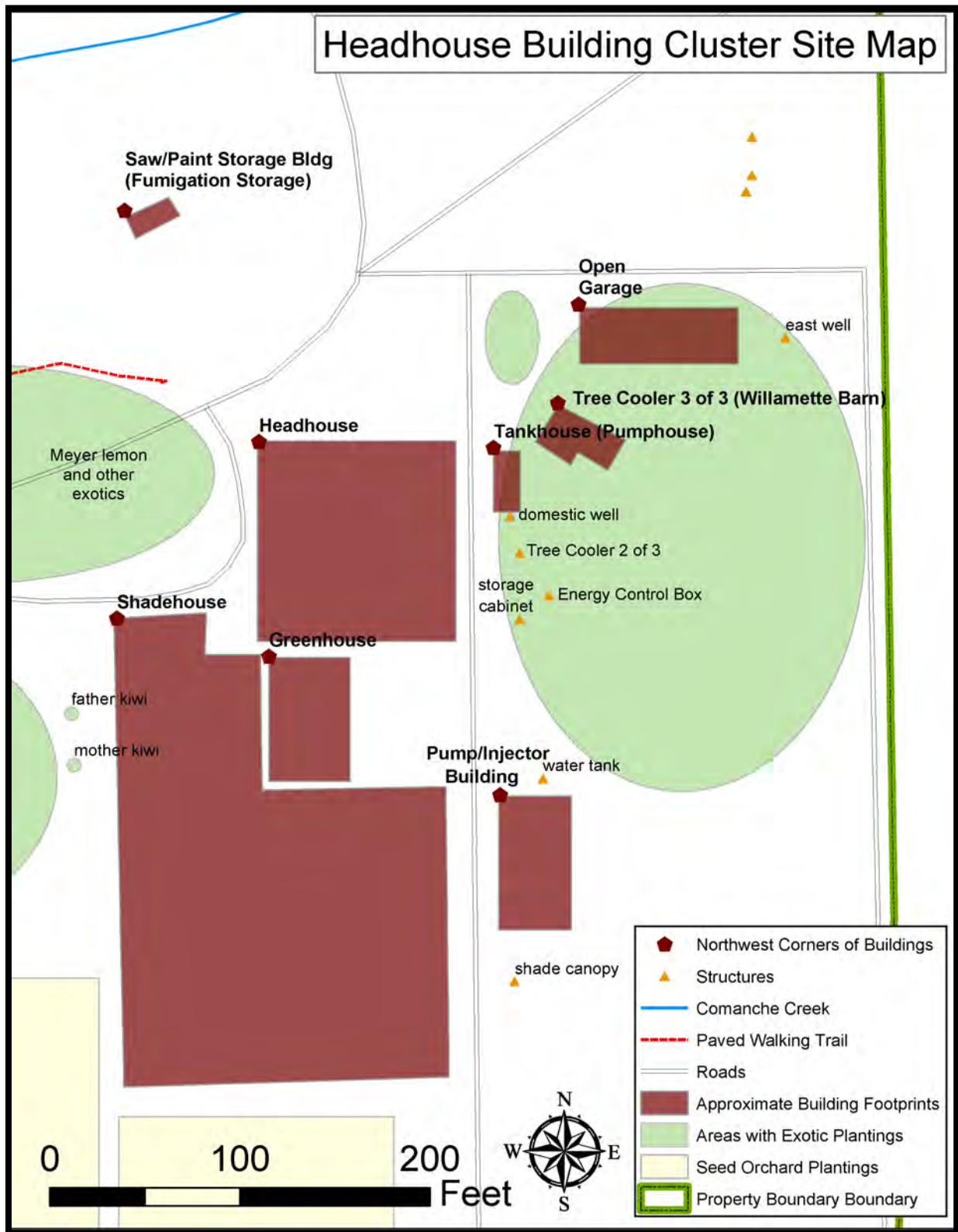


Figure 94: Site map for the headhouse building cluster

Tankhouse (Pumphouse) and Domestic Well; #1640

David Fairchild, administrator in charge from 1903 to 1928 of the Section of Seed and Plant Introduction of the Agricultural Research Service of the USDA, visited the newly donated lands of the Chico Plant Introduction Garden on August 7 of 1904 and later recalled that his associates there were “working with feverish activity to put the land in order, construct the buildings and greenhouses, erect the pumping plant and equip the garden.”¹⁸⁰ As of February 1905, the Chico Daily Record reported that improvements underway included a pumphouse, a storehouse, a barn, and a series of glass-enclosed greenhouses.¹⁸¹ It is safe to assume that the pumphouse was completed and fitted in advance of the 1905 field season.

Architectural Style

It is designed in an Italian Renaissance Revival style, simple hipped-roof form, with certain elements of the prairie and craftsman styles and an overall utilitarian appearance. Visually dominant features of the Italian Renaissance Revival style that are present on this building include a low-pitched simple hipped roof covered in ceramic tiles, a symmetrical façade, brick quoins at each corner, strongly pedimented windows (though highly utilitarian in this instance), and a stone veneer (though in this case cinder blocks that have been rough-faced in order to resemble stone). The unboxed eaves and exposed rafters of this building are characteristic of the contemporaneous craftsman style, though the faux-stone veneer, quoins, and strong geometric pediments do not lend themselves readily to that style. While the hipped-roof form of the prairie style can commonly contain secondary details characteristic of the Italian Renaissance Revival style,¹⁸² the confluence of Italian Renaissance Revival features on this building, as well as the absence of any dominant prairie features, mark this building more securely in the Italian Renaissance Revival style.



Figure 95: View of Tankhouse (Pumphouse) from the northwest. This building, constructed ca. 1905, is the only existing building on the present-day site of the Chico Plant Introduction Garden that does not markedly display a post Arts-and-Crafts movement modern style of American architecture. Photograph taken 6/25/2019.

While this building is a blending of contemporaneous architectural styles, the dominant appearance is that of Italian Renaissance Revival with a strong amount of utilitarian construction, attesting to the use of the building, that incorporated available materials and designs prevalent in America in the early part of the 20th century. The Italian Renaissance Revival style was considerably less common in the early 20th-century than the contemporaneous craftsman style. The Italian Renaissance Revival style was most

¹⁸⁰ Fairchild, *The World was my Garden*, 300.

¹⁸¹ Jones & Stokes Associates, Inc., *Chico Plant Introduction Garden*, 1.

¹⁸² McAlester, *A Field Guide*, 551.

commonly evoked in pre-depression-era landmark buildings of metropolitan areas, and it rapidly declined in popularity after the Great Depression.¹⁸³ The Tankhouse (Pumphouse) is the only existing building on the present-day site of the Chico Plant Introduction Garden that does not markedly display a post-Arts-and-Crafts-movement modern style of American architecture.

Architectural Features

The Tankhouse (Pumphouse) is one story, with a rectangular-shaped plan, cinder-block walls, and a wood-framed roof. The building's main façade is oriented towards the west. The Tankhouse (Pumphouse) is 13'5" by 31'5", totaling approximately 425 square feet. The Tankhouse (Pumphouse) has a simple hipped roof with a north-south ridge and a low pitch. It is sheathed with rounded ceramic tiles and features an unboxed eave projection with exposed rafters. There are no visible roof projections. The building's foundation consists of poured concrete. The building's walls are composed of cinder blocks that have been rough-faced in order to resemble stone. These rough-faced cinder blocks are very similar in execution to those found on the basement storage room of the Office Building (Laboratory).

The Tankhouse (Pumphouse) has two entrances. The main entrance is on the western (road-side) elevation and consists of a solid wood door with simple wooden moulding that has deteriorated over time. The door is framed within thickly set poured concrete, with a simple geometric pediment also of poured concrete. The main entrance on the western elevation is flanked to either side by six-paned, single-frame windows that do not seem to open. The panes are frosted with wire mesh embedded into them. They are separated by muntins and are set in a wooden frame that is itself set in a thick frame of poured concrete with a simple geometric pediment of poured concrete that is identical to that overtopping the main door. These two windows are slightly asymmetrically positioned on the western elevation, likely in order to accommodate the original two-room interior design of the building. The northern elevation contains one large wooden sliding door with six window panes at eye-level separated by wooden muntins. Like those on the western elevation, these window panes are frosted, with wire mesh embedded into them. The door is wooden, with simple wooden moulding and a wooden frame set within a thick frame of poured concrete with a geometric pediment above. This door too is slightly asymmetrical, likely in order to accommodate the hardware associated with a large sliding door. The eastern and southern elevations each have one window apiece, both constructed in an identical fashion as those described above.

¹⁸³ McAlester, *A Field Guide*, 498.

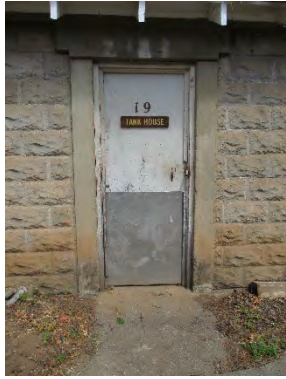


Figure 96: Main door, western elevation of Tankhouse (Pumphouse). Note thick concrete pediment. Photograph taken 6/25/2019.



Figure 97: Window from western elevation of Tankhouse (Pumphouse). Note thick concrete pediment. Photograph taken 6/25/2019.

A water hose and an electrical switchboard are mounted onto the building at its southwestern corner. The domestic well infrastructure is located just south of the building on a concrete pad with two large water lines running into the building. Two additional smaller water lines run into the building on its eastern elevation, and an electrical outlet is hung from the eave projection at the building's northeastern corner.

The interior of the Tankhouse (Pumphouse) houses one large water tank and four smaller ones, a propane tank and generator, electrical breakers, and storage. The condier blocks are smooth on the interior of the building and the boards and rafters of the roof are fully exposed in a highly utilitarian fashion.

Landscape Setting

The tankhouse (pumphouse) and domestic well occur within the setting of the property's 30-acre historic core, vegetated by eight areas of ARS-era historic exotic plantings that comprise a common aesthetic theme and a cohesive design as a rural historic landscape.

As of 1936, the area directly surrounding the Tankhouse (Pumphouse) was described as a garden (Area A), much of which has survived to the present day in the form of exotic trees and plantings. Just southeast of the Tankhouse (Pumphouse) is a fragrant common myrtle shrub collected from Turkey by H.L. Westover and C.R. Enlow in 1935. There are holly trees planted north of the Tankhouse (Pumphouse) across from the driveway to the Tree Cooler 3 of 3 (Willamette Barn), as well as a large open grove of ARS-era historic exotic trees to the east and south of the Tankhouse (Pumphouse).



Figure 98: Common myrtle shrub at southeast corner of Tankhouse (Pumphouse), collected from Turkey in 1935. Photograph taken 6/25/2019.



Figure 99: More exotic plantings in the direct vicinity of the Tankhouse (Pumphouse). Photograph taken 6/25/2019.

The Tankhouse (Pumphouse) is located directly across the street, approximately 20' feet east from the headhouse. This street was previously referred to as First Avenue. It is approximately 10' south of the Tree Cooler 3 of 3 (Willamette Barn) and directly south of its driveway, which was poured in 1995. The Tankhouse (Pumphouse) is approximately 25' north from the cold-storage shed and 150' north from the Pump/Injector Building. There is a poured-concrete sidewalk in front of the Tankhouse (Pumphouse)'s western elevation.

Modifications

Sometime after 1942, the interior of the Tankhouse (Pumphouse) was converted from two rooms to one room. A driveway to a residence once ran directly south of the building, but was revegetated after the building was removed in the 1960s. First Avenue, the street directly west of the Tankhouse (Pumphouse) has been paved and maintained regularly throughout the 20th century. The roof of the Tankhouse (Pumphouse) has been repaired and re-tiled on more than one occasion, but with materials and in a style that presumably resembles the original.

Integrity

The Tankhouse (Pumphouse), as shown below from June 2019, has undergone almost no structural modifications, except for re-roofing with materials that resemble the originals. Its windows and window panes appear original, and possible the primary door as well, though it shows some evidence of disrepair. Though the building's setting has been altered to some degree as the administrative site has grown and contracted, and as the adjacent Shop Road Maintenance yard has been converted to new uses, the Tankhouse (Pumphouse) is nevertheless located within the historic core of the property in close proximity to a number of ARS-era historic exotic plantings, which conveys a strong integrity of original setting. The Tankhouse (Pumphouse) retains integrity in all other categories: location, design, materials, workmanship, feeling, and association with significant trends in American agriculture that have contributed to regional and national industries, and to the sciences of plant biology, crop husbandry, and horticulture.¹⁸⁴

¹⁸⁴ Jones & Stokes Associates, Inc., *Chico Plant Introduction Garden*. 7.



Figure 100: Western elevation of Tankhouse (Pumphouse), with primary entrance. Photograph taken 6/25/2019.



Figure 101: Southern elevation of Tankhouse (Pumphouse), and site of domestic well. Photograph taken 6/25/2019.



Figure 102: Eastern elevation of Tankhouse (Pumphouse) with exotic plantings in foreground. Photograph taken 6/25/2019.



Figure 103: Northern elevation of Tankhouse (Pumphouse) with secondary sliding-door entrance. Photograph taken 6/25/2019.



Figure 104: Exposed boards and rafters on interior of Tankhouse (Pumphouse). Photograph taken 6/25/2019.



Figure 105: Large water tank located in interior of Tankhouse (Pumphouse). Photograph taken 6/25/2019.

Saw/Paint Storage Building (Fumigation Storage); #2625

Architectural Description and Setting

Constructed in 1928, the Saw/Paint Storage Building (Fumigation Storage) is a utilitarian one-story concrete building with a rectangle-shaped plan. The building's main façade is oriented towards the south. The Saw/Paint Storage Building (Fumigation Storage) is approximately 20.5' by 13', covering approximately 266.5 square feet. The Saw/Paint Storage Building (Fumigation Storage) has a flat roof that is slightly pitched to the north (riverside). A frontal parapet, higher at the center than at the sides, is located on the southern (primary) elevation. It is ornamented with a decorative three-hole motif, symmetrically installed at center. The roof contains a gutter and downspout on its northern (riverside) elevation, as well as a turbine and an air vent. The building's foundation is of concrete. The building's walls are concrete, with a smooth but not slick finish.

The Saw/Paint Storage Building (Fumigation Storage) has three entrances. The two main entrances are on the southern elevation. The left-hand one is a solid door in a thick wooden frame with what appears to be original hardware, enscribed with "A1 20 83." The right-hand one is a more recent replacement, composed of metal in a metal frame, with hand-applied concrete fitted around the frame. The southern elevation contains a shed door in a wooden frame, composed of vertical wooden boards. It is presently unused and obstructed by materials. The Saw/Paint Storage Building (Fumigation Storage) contains one window on its eastern elevation. It is single-paned with metal casing in a wooden frame with metal bars fitted across it.



Figure 106: Left-hand door of southern (primary) elevation. Photograph taken 6/25/2019.

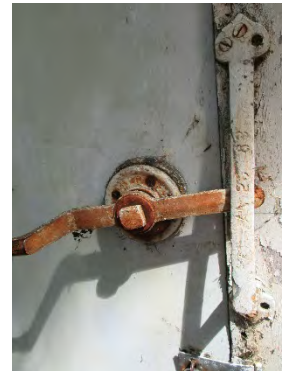


Figure 107: Close-up of what appears to be original hardware on left-hand door of southern (primary) elevation. Photograph taken 6/25/2019.



Figure 108: Unused wooden shed door on northern elevation. Photograph taken 6/25/2019.



Figure 109: The only window of the Saw/Paint Storage Building (Fumigation Storage), on its eastern elevation. Photograph taken 6/25/2019.

One additional feature of note are the remains of a ring-and-pulley system on the building's western elevation. The ring is almost halfway up the wall and the pulley at the roof-wall junction. Its original purpose was likely for loading either pack animals, horse carts, or vehicles.



Figure 110: Old pulley system at roof-wall junction of western elevation. Photograph taken 6/25/2019.



Figure 111: Decorative three-hole motif on southern (primary) elevation. Photograph taken 6/25/2019.

The setting/landscaping around the Saw/Paint Storage Building (Fumigation Storage) is the same as that of the headhouse. See the Landscape Setting section of the description of the headhouse below. The fumigation/hazmat building is located approximately 70' to the northwest of the headhouse, across from a parking area within an open grassy field abutting Comanche Creek to the north. To the west of the Saw/Paint Storage Building (Fumigation Storage) is a secondary trailhead for the paved walking trail that runs along Comanche Creek. West of the trailhead is a Meyer lemon, presumably collected by Frank N. Meyer from China, perhaps as early as 1908. Approximately 250' to the east of the Saw/Paint Storage Building (Fumigation Storage) is the yard of the old search-and-rescue building cluster.

Modifications

As of December of 1924, two other buildings stood in the near vicinity of where the Saw/Paint Storage Building (Fumigation Storage) is located today. Their purpose is uncertain.

The Saw/Paint Storage Building (Fumigation Storage) has always been a storage building, but for different materials throughout its history that attest to changing uses of the property as a whole. In 1933, it was referred to as the fumigation house. It was simply termed 'storage building' as of 1962. It was called the chemical or pesticide storage building/shed as of 1979, when plans were made for its removal given the shared function that the new Pump/Injector Building would serve. It was called chainsaw storage as of 1994 and today it houses both chainsaw equipment and paint. Stenciled on all sides of the building today are the words 'FLAMMABLE COMBUSTIBLE STORAGE NO SMOKING.'



Figure 112: Historic photograph of a peach tree undergoing fumigation. Date unknown.

The Saw/Paint Storage Building (Fumigation Storage) has undergone very few alterations since its construction in 1928. The right-hand door and thick wooden frame on the building's southern (primary) elevation has either been removed and replaced, or this building originally had a one-room interior and the right-hand door and interior partition were installed after the initial construction of the building. This is evidenced by the hand-applied concrete around the right-hand door, while the left-hand door is fitted within a thick wooden frame. Sometime after 1950, the window on the eastern elevation was replaced and bars installed over it. The ring-and-pulley system on the building's western elevation has also been partially dismantled, and sometime before 1979 electrical wiring and a water line were connected to the exterior of the building. The water line was then removed by 2003. Otherwise, the Saw/Paint Storage Building (Fumigation Storage) is largely intact in form and function.

Integrity

The Saw/Paint Storage Building (Fumigation Storage), as shown below, retains integrity in terms of location, design, and materials. Certain aspects of the building's setting and feeling have been altered, especially with the construction of the Shop Road Maintenance Yard building cluster to the east, but other aspects are still intact, i.e. the function of the building and its adjacency to the headhouse and to Comanche Creek. This building's association with significant trends in American agriculture is intact. The building dates to the property's period of significance (1904-1973), though its association with that period's significant activities is ancillary, given that storage is a utilitarian function that does not require any singular or unique craftsmanship, form, or design. Nevertheless, the Saw/Paint Storage Building (Fumigation Storage) dates to the property's period of significance, is located within the property's historic core, and retains a preponderance of integrity.



Figure 113: Southern (primary) elevation of Saw/Paint Storage Building (Fumigation Storage) with decorative three-hole motif at center of roofline. Photograph taken 6/25/2019.



Figure 114: Western elevation of Saw/Paint Storage Building (Fumigation Storage). Photograph taken 6/25/2019.



Figure 115: Northern elevation of Saw/Paint Storage Building (Fumigation Storage), with materials storage in foreground. Photograph taken 6/25/2019.



Figure 116: Eastern elevation of Saw/Paint Storage Building (Fumigation Storage), with the building's only window. Photograph taken 6/25/2019.

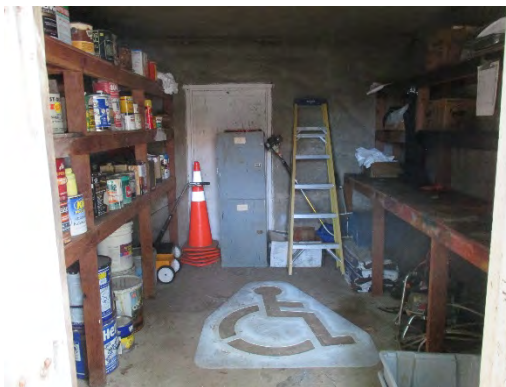


Figure 117: Left-hand interior room of Saw/Paint Storage Building (Fumigation Storage). Photograph taken 6/25/2019.



Figure 118: Remains of exterior electrical wiring that once serviced an exterior light on the eastern elevation of the building. Photograph taken 6/25/2019.

Headhouse; #2814

Architectural Description

Constructed in 1932, the headhouse is a ranch style, hipped-roof form, one-story building with concrete walls and a wood-frame roof. It has a square-shaped plan, with a square-shaped interior courtyard. The building's main façade is oriented towards the north.



Figure 119: View from the south of headhouse/greenhouse/lathhouse complex in 1937. The headhouse is the building on the right with the hipped roof. Note the tall chimney projection, since removed. Also note the gables of at least five separate greenhouses present at this time. Photograph taken winter, 1937.

The headhouse is approximately 100' by 105,' approximately 10,500 square feet, which includes the unenclosed courtyard, which is approximately 60' by 65'. Not including the unenclosed courtyard, the headhouse is approximately 6,600 square feet. The headhouse has a hipped roof with a low-to-medium pitch and is sheathed with modern shingles. The roof features a boxed eave with gutters and downspouts at the corners. The eave projection is boxed with plywood boards equipped with regularly spaced air vents. A water pipe is hung from the eave projection on the east and south elevations. An antenna is affixed to the roof, as well as a number of vent pipes, a turbine, electric fixtures, and an air-conditioning unit. Prior to a re-model that occurred on this building around 1981, there was a chimney projection toward the building's southwest corner (see Figure 119 above), but this has since been removed. The building's foundation consists of poured concrete. The building's walls are clad with vertical wooden shiplap siding on the north, west, and east elevations. The building's walls are clad in stucco on the south elevation and on the exterior walls of the courtyard.

The exterior of the headhouse has three pedestrian entrances, five roll-up bay doors, and three roll-up breezeway doors. The interior courtyard has an additional pedestrian door and four large double-doors. The main entrance is off-center on the northern elevation, is composed of modern hardware and a single-paned picture window at eye level, and is flanked on either side by two tall vertical single-paned windows that do not open. Though the front entrance is not recessed from the rest of the north wall, this impression is given by means of the roof projecting further outward at the front entrance in a pronounced manner, supported by two wooden pillars to create a small covered portico. The faux-recessed entrance, off-center position, and tall vertical windows are characteristic of the ranch style of American domestic

architecture. The pedestrian entrance on the western elevation is also composed of modern hardware and a single-paned picture window at eye level. It is framed by wooden casing, and has a sign above it that reads “LUNCHROOM.” The southern elevation contains one pedestrian entrance, directly adjacent from the greenhouse. It is composed of metal with a very large single-paned picture window, and is framed by wooden casing. It has a sign above it that reads “POTTING ROOM.” The southern elevation also contains three outlines of doors that have been removed and blocked in with stucco. In total, the building contains five bay doors: two on the northern elevation, one on the western elevation, one on the eastern elevation, and one on the southern elevation. All of them are metal roll-ups, with air vents and wooden casings, that allow vehicle or forklift access into interior rooms. The two bay doors on the northern elevation have signs above them that read “STORAGE.” The bay door on the western elevation has a sign above it that reads “POTTING ROOM.” The three breezeway doors (one on the northern elevation, one on the western, and one on the eastern) are of similar materials, but extend further up the walls of the building almost to the eaves and they open directly into the interior courtyard. The pedestrian door of the courtyard is composed of modern hardware, a single-paned picture window at eye level, and wooden casing. The four large double-doors of the interior courtyard are wooden with three horizontal panels on each door, the upper and lower panels fitted with diagonal wooden boards and the central panels fitted with single-paned windows of frosted glass with wire embedded (similar to that used on the windows of the Tankhouse (Pumphouse)). These courtyard double-doors seem to be the only remaining original doors on the building.

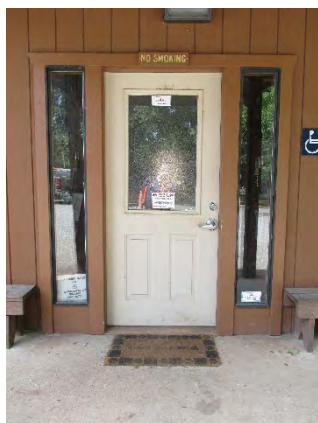


Figure 120: Main pedestrian entrance to the headhouse on its northern elevation. Photograph taken 6/25/2019.



Figure 121: One of four double-doors on interior courtyard of headhouse. Photograph taken 6/25/2019.

Besides those directly associated with doors, there are two windows on the northern elevation of the building. They are located to either side of the main entrance. The one to the left of the main entrance is fixed in a post-1950 metal frame with wooden casing. The one to the right of the main entrance is a paired window separated by a wooden mullion with two panes per pair in post-1950 metal frames, the bottom panes of which are smaller than the upper panes and open outward. The window pair is framed by wooden casing. The western elevation has one window pair identical to that just described, as well as a one non-paired window otherwise similar to that just described except that both panes are about the same size. The western elevation also contains one smaller single-paned window in metal frame within wooden casing. The eastern elevation contains one paired window as described above, as well as one

non-paired window that is otherwise very similar to the paired windows with the lower pane considerably smaller than the upper pane. The southern elevation contains two stand-alone windows, each double-paned in post-1950 metal frames within wooden casings.



Figure 122: Paired windows on western elevation in post-1950 metal frames. Photograph taken 6/25/2019.



Figure 123: Non-paired window variation on western elevation. Photograph taken 6/25/2019.

Landscape Setting

The headhouse occurs within the setting of the property's 30-acre historic core, vegetated by eight areas of ARS-era historic exotic plantings that comprise a common aesthetic theme and a cohesive design as a rural historic landscape.

The headhouse is fronted by an asphalt-paved parking area, essentially the terminus of Center Lane, the primary access road leading from the property's main gate to the Office Building (Laboratory) and public trailhead. Beyond the parking area, approximately 70' to the northwest is the fumigation/hazmat building within an open grassy area abutting Comanche Creek. Immediately across the driveway to the west of the headhouse is the northwest portion of the shadehouse, as well as a vegetated median encircled by access road, a feature of the area since at least 1936. Immediately to the south of the headhouse is the only remaining greenhouse and the southern portion of the shadehouse to the south of that. The headhouse is located directly across the street, approximately 20' feet west from the Tankhouse (Pumphouse). This street was previously referred to as First Avenue.

The vegetation and landscaping in the near vicinity of the headhouse consists of a number of exotic plants and trees, some of which in and of themselves are historically significant. Across from the asphalt parking area directly north of the building is a secondary trailhead for the paved walking trail that runs along Comanche Creek. West of the trailhead is a Meyer lemon, presumably collected by Frank N. Meyer from China, perhaps as early as 1908. This is the only observed example remaining on site of the Meyer lemon, an introduced plant that was heavily propagated at the Chico Plant Introduction Garden in the first half of the 20th century, was distributed widely in California, Florida, and Texas, and was then replaced with other experimental plantings in Chico itself. Also near the headhouse, just west of the shadehouse, are the mother and father kiwi vines, the first two of their kind successfully propagated on North American soil. They were collected by Hayward R. Wright in New Zealand in 1935, and the mother still produces fruit to this day. Across from First Avenue (the driveway on the eastern side of the headhouse) is a large open grove of exotic trees, including a Chinese fringe tree, a Chinese pine, and a goldenrain tree, the last of which (and likely all three of which) were collected by Frank N. Meyer in China in 1908.



Figure 124: Meyer lemon, presumably collected by Frank N. Meyer in China, perhaps as early as 1908. Photograph taken 6/25/2019.



Figure 125: Father kiwi vine, collected by Hayward R. Wright in New Zealand in 1935, with shadehouse to the left. Photograph taken 6/25/2019.



Figure 126: Mother kiwi vine, collected by Hayward R. Wright in New Zealand in 1935, still producing fruit to this day. Photograph taken 6/25/2019.



Figure 127: Chinese pine, likely collected by Frank N. Meyer in China in 1908. Greenhouse is at back left, headhouse is beige building at back right. Photograph taken 6/25/2019.

Modifications

The headhouse has been modified to a moderate degree on a few occasions, the most intensive of which occurred in or soon after 1981. Sometime after 1962, two vegetated (presumably grassy) medians were paved over to the north of the building in order to accommodate additional pavement.

Following transfer of the property from the Agricultural Research Service to the Forest Service, the year 1981 witnessed the most extensive modifications of this building's history. The front entrance was relocated from the western elevation across from the parking median to the northern elevation across from the fumigation/hazmat building. The roof was remodeled and extended at the new entrance to create a covered portico. The roof was also refitted with new shingle sheathing and plywood boarding, and the chimney was removed where it had projected through the roof at the building's southwest corner. Other roof projections were also removed or replaced. Doors and windows were modified, removed, or if kept, were replaced with modern fittings on all elevations of the building, with the exception of the double-doors located in the interior courtyard of the building. Three doors on the south side of the building were removed and blocked in with stucco. These doors may have previously led directly into greenhouses when as many as six greenhouses were located directly to the south of the headhouse. Utilities were updated, including water, sewer, electrical, heating, air conditioning, ventilation, and communication. Interior room partitions were re-arranged at this time, as well as the function of almost

all interior space in the building as it has slowly over time transitioned from a full workshop with facilities for blacksmithing, horseshoeing, and packing to its present-day use as an office building with restroom, lunchroom, and storage facilities.

Despite the abundance of updates that occurred in 1981, very few of them involved any major structural alterations, and an effort was made to use materials similar to those that were already present on the building.

Integrity

The headhouse, as shown below, has retained integrity in a number of categories. Its location is unchanged since its construction in 1932. Its design was altered in 1981, but maintained characteristics of the ranch style of American domestic architecture, as well as utilitarian aspects (i.e. roll-up bay doors) of its original function. Its setting has been modified through the course of the 20th century, but since it is located within the property's historic core, a strong representation of the building's original setting is still intact. Materials have been replaced, particularly in the 1981 remodel, but have generally been replaced with newer materials that resemble the originals. The exception to this are the building's exterior doors and windows. The feeling of the building is still intact, as is its association with significant trends in American agriculture that have contributed to regional and national industries, and to the sciences of plant biology, crop husbandry, and horticulture.¹⁸⁵ Though nursery operations on site ceased in 2004, the potting room of this building is still intact, as are other implements and fixtures that attest to the building's role in horticultural science.



Figure 128: Northern elevation of headhouse, with primary entrance to building at right. Note the off-center roof extension forming a covered portico in characteristic ranch style. Photograph taken 6/25/2019.



Figure 129: Western elevation of headhouse. Photograph taken 6/25/2019.

¹⁸⁵ Jones & Stokes Associates, Inc., *Chico Plant Introduction Garden*, 7.



Figure 130: Eastern elevation of headhouse, along what was once referred to as First Avenue. Photograph taken 6/25/2019.



Figure 131: Southern elevation of headhouse. Greenhouse to the left. Photograph taken 6/25/2019.



Figure 132: One of three blocked-in doorways on the southern elevation of headhouse. Photograph taken 6/25/2019.



Figure 133: Under-eave projection, boxed in with plywood, showing utility pole and light fixtures at northeast corner of building. Photograph taken 6/25/2019.



Figure 134: Conveyor machinery located within enclosed courtyard of headhouse. Photograph taken 6/25/2019.



Figure 135: One of three breezeways, as seen from interior of courtyard. Photograph taken 6/25/2019.



Figure 136: Panoramic view of courtyard interior of headhouse. Photograph courtesy of Joel Little, taken 9/14/2015.

Greenhouse; #2806

The existing greenhouse was constructed in 1966. Under the administration of the Agricultural Research Service, from four to six glass-enclosed greenhouses had been located in the same immediate area since at least 1905, though they had generally contracted in number until only one remained on site as of 1961. The existing 1966 greenhouse replaced the last of the 1920s-era greenhouses in the same location, adjacent to the propagation area/potting room of the headhouse.

Architectural Description and Setting

The greenhouse is a one-story utilitarian building with a rectangle-shaped plan. The building's main façade is oriented towards the north, directly across from the propagation area/potting room of the headhouse. The greenhouse is approximately 62' by 42' and approximately 2,600 square feet. It has a front-gabled roof with a medium pitch and no eave projection. The roof is composed of glass panes set within an aluminum framework. It contains projections of turbines and air vents, as well as a now-disconnected water-intake pipe at its northeast corner. The building's foundation consists of 1-2' of poured concrete along its perimeter, laid atop a poured concrete slab. The building's walls are composed of glass panes (some since replaced with fiberglass) set within an aluminum framework. Large jet-fan units are installed along the western elevation, next to the shadehouse.

The greenhouse has two entrances. The main entrance is on the north elevation, directly across from the propagation area/potting room of the headhouse. The door consists of a large frosted eye-level picture window pane and a metal kick-plate. Numbers above it read "25," and a wooden sign on it reads "GREEN HOUSE 1." The entrance is flanked to either side by large electrical cabinets. The north elevation also contains a non-structural wooden frame of uncertain function. The south elevation contains one door very similar to the one described above, with a large frosted eye-level picture window. Window panes that open outward to provide ventilation line both the eastern and western elevations just below the roof-wall junction. The interior of the building is fitted with numerous light fixtures, air vents, irrigation sprinklers, and mechanical fixtures that attest to the building's utilitarian function.



Figure 137: Main door, northern elevation across from the propagation area/potting room of the headhouse. Photograph taken 6/25/2019.



Figure 138: Window panes opened outwards above jet-fan units on western elevation. Photograph taken 6/25/2019.

The setting/landscaping around the greenhouse is the same as that of the headhouse. See the Landscape Setting section of the description of the headhouse above. The greenhouse is located approximately 5'

south of the headhouse and 5' north and east of the shadehouse. Another fiberglass-lined greenhouse was located directly to this greenhouse's east from approximately 1980-2019. Since its removal, the greenhouse is now flanked to the east by a large open concrete slab.

Modifications

In the immediate area of the present-day greenhouse, other glass-enclosed greenhouse buildings have stood since at least 1905. As of 1908, Chico boasted two greenhouses.¹⁸⁶ As of 1913, four greenhouses had been constructed on site and two more were still under construction (see Figure 15). Six greenhouses are shown on a survey map from December of 1924. Five are shown as of 1936, three of which are directly adjacent, perhaps connected, to the headhouse, a new construction at that time. Four are remaining as of 1942, one having been replaced by two fish ponds. Two are remaining as of 1957. Only one remains as of 1961, the last of the 1920s-era greenhouses. It is in the same location as the present-day 1966 greenhouse directly across from the propagation area/potting room of the headhouse, though it was longer and thinner (76' by 18') than the present-day greenhouse.



*Figure 139: View of greenhouses and headhouse from the south, ca. 1956.
From Hodge, "Federal Plant Introduction Gardens," 94.*

The existing greenhouse, currently under evaluation, was erected in 1966. A second greenhouse was erected directly to the east of the existing greenhouse in 1980 or soon thereafter. This adjacent greenhouse had fiberglass panes set within a metal framework. It was removed from the site between September and December of 2018.

¹⁸⁶ Meyer, "Letters," 710 (1650 of Vol. 1).

Since its construction in 1966, the greenhouse has been re-configured from three interior rooms to two at some point after 1977. In 1978, new interior seedling platforms were installed. Around 1980, the lighting, electrical, heating, air ventilation and circulation, and water supply systems of the greenhouse were updated. Since then, some of its glass panes have been replaced with fiberglass, particularly on its south elevation, and the building has seen general decay and uncontrolled vegetative growth in its interior due to a lack of recurrent maintenance. Otherwise, it retains its original shape and form, as well as many of its interior fixtures, though presumably they are no longer functional.

Integrity

The greenhouse, as shown below, retains integrity in terms of location and design, though certain elements of its setting and materials have been altered over time, as described above. While the present greenhouse represents a continuation of precedent and practice dating back to 1905, this particular 1966 building dates to the end of the period of significance for this property (1904-1973). The existing greenhouse, employed for purposes of horticultural and genetic science since 1966, is representative of the property’s association with significant trends in American agriculture. While general deterioration of the building and non-use of the grounds as a nursery since 2004 is a detractor, the greenhouse is nevertheless able to convey an aesthetic and historic feeling of the property during its period of significance. This feeling is augmented as well by the building’s intact association, and its setting within the property’s historic core.



Figure 140: Northern (primary) elevation of greenhouse. Headhouse to the right, and shadehouse in the background. Photograph taken 6/25/2019.



Figure 141: Eastern elevation of greenhouse, with large open concrete slab in foreground where another greenhouse had stood until after September of 2018. Photograph taken 6/25/2019.



Figure 142: Southern elevation of greenhouse, on which a number of glass panes have been replaced with fiberglass. Shadehouse in foreground. Photograph taken 6/25/2019.



Figure 143: Western elevation of greenhouse, fitted with large jet-fan appliances. Shadehouse in foreground. Photograph taken 6/25/2019.



Figure 144: Smaller north room of interior of greenhouse, considerably deteriorated with uncontrolled vegetative growth. Photograph taken 6/25/2019.



Figure 145: Another view of smaller north room of interior of greenhouse. Photograph taken 6/25/2019.



Figure 146: Larger south room of interior of greenhouse. Note concrete walkways interspersed with gravel to allow for water drainage within the building. Photograph taken 6/25/2019.



Figure 147: Disconnected water delivery system at northeast corner of greenhouse. Photograph taken 6/25/2019.



Figure 148: Detail of geared mechanism for opening side-wall windows outwards. Photograph taken 6/25/2019.



Figure 149: 1-2' poured concrete perimeter foundation. Photograph taken 6/25/2019.

Shadehouse; #2805

Architectural Description and Setting

Constructed ca. 1981, the shadehouse is a one-story utilitarian L-shaped structure composed of support poles of extruded rectangular steel tubing, crossed overhead by beams of steel tubing fitted with electrical outlets, cyclic light fixtures, water pipes, and a mist-spray irrigation system. This steel framework is then covered over by a shade cloth of woven fabric. This structure does not exhibit a main façade or primary entrance.

The shadehouse is at its longest axes approximately 170' by 240'. It covers approximately 26,560 square feet, though neither is unenclosed without either walls or ceiling. The upper cross-beams are flat-topped, covered in many places with black shade cloth, though this has been removed in other places. Shade cloth is also draped over the western elevation to serve as a kind of a wall. Corrugated fiberglass panels serve as a kind of a wall on the northern elevation, south of the greenhouse. The shadehouse's foundation is asphalt. Though the shadehouse has no entrances in a formal sense, it does have an interior driveways where the floor is composed of poured concrete as opposed to asphalt, one that runs east-west at the south end of the structure and one that runs north-south along the longest axis of the structure. There are two wood-framed sliding doors at either end of a fiberglass-enclosed room of sorts just south of the greenhouse. This room likely served as a kind of transitional space for plants moving between the greenhouse and the shadehouse.



Figure 150: Concrete 'driveway' bordered by asphalt at south end of shadehouse structure. Photograph taken 6/25/2019.



Figure 151: Wood-framed sliding door to 'room' at northeast portion of structure, just south of greenhouse (on right). Photograph taken 6/25/2019.

There is a good amount of nursery equipment still on site, though nursery operations ceased in 2004. This equipment includes tables, pallets, potters, and surplus hardware stencilled with 'HUMBOLDT NURSERY,' 'GOLD BEACH R D,' and 'SIUSLAW N.F. WALDPORT R.D.'



Figure 152: Surplus hardware with 'GOLD BEACH R D' stenciled on it. Photograph taken 6/25/2019.



Figure 153: Surplus hardware with 'HUMBOLDT NURSERY' stenciled on it. Photograph taken 6/25/2019.

The setting/landscaping around the greenhouse is the same as that of the headhouse. See the Landscape Setting section of the description of the headhouse above. Though not a historic building, the shadehouse occurs within the property's historic core on the same site as previous historic lathhouses/slathouses. The shadehouse directly abuts the mother and father kiwi vines to the east, as well as a number of other exotic tree and plantings in the vicinity of the kiwis. To the south of the shadehouse was a cold-frame hoop house that has since been removed. At present, south of the shadehouse are rows of seedlings planted into weed-suppression fabric and a trellis of sorts for a water line that once connected to the cold-frame hoop house, but now appears to be no longer functional. South of those plantings, still well within the view from the shadehouse, are seed orchards of genetically improved Douglas firs.

The shadehouse is located approximately 5' south and west of the greenhouse. It is approximately 20' west of the southwest corner of the headhouse. It is approximately 25' west, across the street previously referred to as First Avenue, from the Pump/Injector Building.

Modifications

In the immediate area of the present-day shadehouse, other similar structures have stood since at least 1911, variously referred to as slat houses, lath houses, lathe houses, lath sheds, and now as the shadehouse. Design, orientation, and materials of these various shade structures have changed over time, but have always had a direct relationship to both the headhouse and to the greenhouses for the purposes of plant propagation.



Figure 154: View of interior of 'lath shed' on site in 1911. From Dorsett, *The Plant-introduction Gardens*, plate XXV.

Since its construction ca. 1981, the existing structure has retained its original form for the most part. Plans were made in 1992 to extend the shadehouse to the south and to the north at its northeast portion, though materials employed were very similar to what was already existing. Concrete was poured for interior driveways in September of 1993, replacing what had previously been gravel.

In terms of setting, the soil/compost bin at the southwest corner of the shadehouse was removed sometime after 1979. A cold-frame hoophouse to the south of the shadehouse was removed between October of 2017 and May of 2018. And a second greenhouse to the north of the shadehouse was removed between September and December of 2018.

Integrity

The shadehouse, as shown below, retains integrity in terms of location, design, and materials, though certain elements of its setting and feeling have been altered as a product of general deterioration or removal of adjacent buildings and non-use of the grounds as a nursery since 2004. While the present shadehouse represents a continuation of precedent and practice dating back to 1905, this particular building does not date to the period of significance for this property (1904-1973), therefore it does not contain integrity of association with the significant trends in American agriculture for which the property on a whole is representative.



Figure 155: Eastern elevation of shadehouse, along 'First Avenue.' Photograph taken 6/25/2019.



Figure 156: Southern elevation of shadehouse with 'trellis' for defunct water pipe at center. Photograph taken 6/25/2019.



Figure 157: Western elevation of shadehouse, with father kiwi at right. Photograph taken 6/25/2019.



Figure 158: Northern elevation of shadehouse. Photograph taken 6/25/2019.



Figure 159: Interior of shadehouse with light fixtures and irrigation sprinklers hanging from overhead steel beams . Photograph taken 6/25/2019.



Figure 160: Close-up of valves for water-delivery system on interior of shadehouse. Photograph taken 6/25/2019.

Pump/Injector Building; #2629

Architectural Description and Setting

Constructed ca. 1981, the Pump/Injector Building is a ranch-style, hipped-roof-form, utilitarian, one-story, wood-framed building with a rectangle-shaped plan. It was designed to blend with the 1981 re-design of the headhouse. The building's main façade is oriented towards the west.

The Pump/Injector Building is approximately 72.5' by 32.5,' covering approximately 2,356 square feet. The Pump/Injector Building has a hipped roof with a long roof ridge running parallel to its front façade along First Avenue. The roof has a low pitch, is sheathed with shingles, and features an eave with a vertical fascia, but no soffit. This gives the eave the appearance of being boxed from street-view, but leaves the eave overhang, plywood boarding, and rafters exposed from below. Roof projections include a turbine, air vents, and exhaust fans. The building's foundation consists of a 6"-thick poured concrete slab. The building's walls are clad with vertical wooden shiplap siding.

The Pump/Injector Building has three pedestrian entrances on its western elevation, and one pedestrian entrance in addition to one bay door on its southern elevation. One entrance has been boarded in on the eastern elevation. The main entrances are on the western elevation and consist of one double-door and two single doors. The left-hand double-door is metal, with a wooden frame and eye-level picture windows on each door. It has a sign above it that reads 'PUMP ROOM,' as well as hazmat symbology on the right-hand door window. The center door is of the same style as the double-door: metal, with a wooden frame and an eye-level picture window with hazmat symbology embedded on it. It has a sign above it that reads 'CHEMICALS.' This door also contains a single-paned window with metal casing directly above it. The right-hand door of the western elevation is a more recent replacement, with a two-paned metal-framed vertically sliding window at eye-level and two vertical panels below the window. It has the same wooden frame as the other two doors of the western elevation, but this one has an additional wooden frame fitted within the original. There is also hardware present that indicates that the original door opened out to the right, while this replacement door opens out to the left. It has a sign above it that reads 'TOOLS.' The southern elevation contains one pedestrian door that is identical in design to the left-hand and center doors of the western elevation, as described above. The southern elevation also contains a wood-framed metal roll-up bay door, equipped on its right with a hose bibb, an eye-wash station, and an overhead shower. This bay door and its safety features were installed for the purposes of re-filling and washing vehicles equipped with chemical sprayers and the personnel who operated them. The enclosed door on the eastern elevation is boarded up with vertical shiplap siding meant to resemble that which was already present on the building. This enclosed door was also fitted with an exterior concrete apron.



Figure 161: Double-door entrance to pump room on western elevation of Pump/Injector Building. Photograph taken 6/25/2019.



Figure 162: Pedestrian entrance to chemical storage area on western elevation of Pump/Injector Building. Note single-paned window with metal casing directly above door. Photograph taken 6/25/2019.

Besides those embedded in doors, on the western elevation there are two single-paned paired window sets with metal casings and wooden frames and mullions, located just below the eave. Also on the western elevation, there is one single-paned non-paired window with metal casing and wooden frame just below the eave and just above the center door marked 'CHEMICALS.' On the northern elevation, there are two single-paned paired window sets with metal casings and wooden frames and mullion, located just below the eave. On the eastern elevation, there are two double-paned vertically sliding windows with metal casings and wooden frames, located about one foot below the eave. Besides the window embedded in the pedestrian door, there are no windows on the southern elevation.



Figure 163: single-paned paired window sets with metal casings and wooden frames and mullions, located just below the eave on the northern elevation. Photograph taken 6/25/2019.



Figure 164: double-paned vertically sliding windows with metal casings and wooden frames, located about one foot below the eave of the eastern elevation. Photograph taken 6/25/2019.

Located approximately 5' north of the Pump/Injector Building is a 10,000-gallon water tank on a concrete slab. It is fitted with pipes that lead directly into the pump room of the Pump/Injector Building, where it is chemically treated and thence delivered to irrigation systems on the property. It once delivered water to the greenhouse and shadehouse, but the connection to the greenhouse has been removed and likely the same for the shadehouse. The Pump/Injector Building today still serves as the location for storage of certain chemicals, such as herbicides, pesticides, insecticides, fungicides, and fertilizer.

The setting/landscaping around the greenhouse is the same as that of the Tankhouse (Pumphouse). See the Landscape Setting section of the description of the Tankhouse (Pumphouse) above. Though not a historic building, the Pump/Injector Building occurs within the property's historic core. The Pump/Injector Building is located approximately 150' south from the Tankhouse (Pumphouse) and approximately 25' east across First Avenue from the shadehouse. To the west of the Pump/Injector Building is an open grove of mostly exotic trees, and to the south are douglas-fir trees, source-identified for use by the Klamath National Forest, where there had been a citrus orchard as of 1924. The Pump/Injector Building is fronted by the asphalt of First Avenue.

Modifications

The Pump/Injector Building has undergone only minor alterations since its construction between 1981 and 1982. The right-hand door on the western (primary) elevation has been replaced, and a door out of the pump room at the northeast corner of the building on the eastern elevation has been boarded up with wooden shiplap siding.

A cold-frame hoophouse across First Avenue has been removed, and though the shadehouse is still present, is no longer serves an active purpose for most of the year, and that non-use is evident.

Integrity

The Pump/Injector Building, as shown below, retains integrity of location, design, and materials. Its setting and feeling have been altered as a product of general deterioration or removal of adjacent buildings and non-use of the grounds as a nursery since 2004. Though integral to genetic conservation work that occurred on the property between 1974 and 2004, the Pump/Injector Building does not date to this property's period of significance (1904-1973), therefore it is not possess integrity of association with the significant trends in American agriculture for which the property on a whole is representative.



Figure 165: Western (primary) elevation of Pump/Injector Building. Photograph taken 6/25/2019.



Figure 166: Southern elevation of Pump/Injector Building, with vehicle drive-up bay and grove of mostly exotic trees in background. Photograph taken 6/25/2019.



Figure 167: Eastern elevation of Pump/Injector Building. Photograph taken 6/25/2019.



Figure 168: Northern elevation of Pump/Injector Building with 10,000-gallon water tank at right. Photograph taken 6/25/2019.

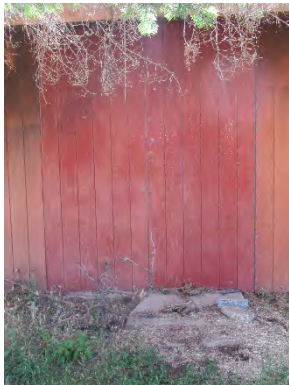


Figure 169: Boarded up door on eastern elevation. Photograph taken 6/25/2019.



Figure 170: Concrete slab foundation. Photograph taken 6/25/2019.



Figure 171: 10,000-gallon water tank. Photograph taken 6/25/2019.



Figure 172: Water-delivery connections from water tank into Pump/Injector Building. Photograph taken 6/25/2019.

Tree Cooler 3 of 3 (Willamette Barn); #2637

Architectural Description and Setting

Relocated to its present site ca. 1992-1995, the Tree Cooler 3 of 3 (Willamette Barn) is a utilitarian one-and-a-half story building with a rectangle-shaped plan and a shed extension on its southern elevation. The building's main façade is oriented towards the west. The Tree Cooler 3 of 3 (Willamette Barn) measures approximately 40' by 25.5,' with a shed extension of approximately 24.5' by 9.' The total square footage of the building is approximately 1,240.5 ft². The barn has a front-gabled roof with a medium pitch, sheathed with corrugated metal. The roof features unboxed eaves with exposed rafters. One turbine on the southern elevation appears to be the only roof projection. The building's foundation consists of poured concrete. The building's walls are of vertical-channel wood cladding, with one horizontal band of trim at about 7' above ground surface on all elevations and one additional horizontal band of trim further up at the roof-wall junction of the western (primary) elevation.

The Tree Cooler 3 of 3 (Willamette Barn) has one pedestrian entrance and one bay door. Both entrance are on the western elevation. The pedestrian door is at the far right of the western elevation entering into the shed extension. The door is metal with modern hardware and a wooden frame. The bay door is located directly beneath the peak of the front gable and is a metal roll-up bay door set within a wooden frame. There are no windows on the building, but there are two full-length shuttered features, which likely function as a means of ventilation, on the southern and eastern elevations of the shed extension. There are also vents just below the peaks of the gables both the western and eastern elevations.



Figure 173: Main pedestrian door, western elevation of shed extension of Tree Cooler 3 of 3 (Willamette Barn). Photograph taken 6/25/2019.

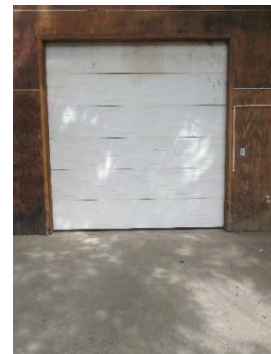


Figure 174: Roll-up bay door beneath peak of gable on western elevation of Tree Cooler 3 of 3 (Willamette Barn). Photograph taken 6/25/2019.



Figure 175: Full-length shuttered feature on southern elevation of shed extension of Tree Cooler 3 of 3 (Willamette Barn). Photograph taken 6/25/2019.



Figure 176: Full-length shuttered feature on eastern elevation of shed extension of Tree Cooler 3 of 3 (Willamette Barn). Photograph taken 6/25/2019.

The setting/landscaping around the Tree Cooler 3 of 3 (Willamette Barn) is the same as that of the Tankhouse (Pumphouse). See the Landscape Setting section of the description of the Tankhouse (Pumphouse) above. Though not a historic building, the Tree Cooler 3 of 3 (Willamette Barn) occurs within the property's historic core. The Tree Cooler 3 of 3 (Willamette Barn) is located approximately 10' north from the Tankhouse (Pumphouse), and approximately 15' south of the vehicle storage building. The concrete driveway of the Tree Cooler 3 of 3 (Willamette Barn) opens out on the intersection of First Avenue and Shop Road, which is part of the old search-and-rescue building cluster.

Modifications

The Tree Cooler 3 of 3 (Willamette Barn) was relocated to its present location ca. 1992-1995. At that time, a new concrete driveway was poured for it. It has seen some deterioration, especially of the shuttered features on its shed extension, but its exterior otherwise does not seem to have been modified since its relocation. Its interior has likely been modified in order to accommodate its new function at the present-day Chico Seed Orchard Administrative Site.

Integrity

The Tree Cooler 3 of 3 (Willamette Barn), as shown below, only retains integrity in terms of materials. It does not retain integrity in terms of location, design, setting, feeling, or association.



Figure 177: Western (primary) elevation of Tree Cooler 3 of 3 (Willamette Barn), the only elevation on the building with entrances. Note two (not one) horizontal bands of trim. Photograph taken 6/25/2019.



Figure 178: Southern elevation of Tree Cooler 3 of 3 (Willamette Barn). Photograph taken 6/25/2019.



Figure 179: Eastern elevation of Tree Cooler 3 of 3 (Willamette Barn), with vehicle storage building in background. Photograph taken 6/25/2019.



Figure 180: Northern elevation of Tree Cooler 3 of 3 (Willamette Barn). Photograph taken 6/25/2019.

Apart from the permanent buildings described above, there are four standing structures within the headhouse building complex that have been installed since development of the property by the Forest Service starting ca. 1979, and that remain on site. These include one Tree Cooler 2 of 3 on a concrete pad, one supplemental storage cabinet on a concrete pad, one large generator on a concrete pad, and one shade canopy to protect a large conveyor machine.

Tree Cooler 2 of 3; #2636

Both the Tree Cooler 2 of 3 and the supplemental storage cabinet are metal, rectangle-shaped with flat rooves, and oriented toward First Avenue to the west. The Tree Cooler 2 of 3 was installed ca. 1980. It measures 22' by 15.5,' or 341 ft². It has one entrance on its western elevation along First Avenue, and two air-conditioning units at the roof-wall junction of its eastern elevation. Its foundation is concrete slab. It is located 25' south of the Tankhouse (Pumphouse), 100' north of the Pump/Injector Building, and 20' east of the headhouse across First Avenue.



Figure 181: Western elevation of and entrance into the cold-storage shed. Photograph taken 6/25/2019.



Figure 182: Eastern elevation of cold-storage shed, with two air-conditioning units at roof-wall junction. Photograph taken 6/25/2019.

Supplemental Storage Cabinet

Installed ca. 1980, the supplemental storage cabinet measures 3.5' by 9.5,' or approximately 22 ft². It is set on a concrete slab measuring 10.5' by 7.5.' Its function is related to that of the Tree Cooler 2 of 3, though the supplemental storage cabinet does not seem to be air-conditioned. It has two doors on its western elevation along First Avenue, though they are not entrances but rather cabinet doors. The supplemental storage cabinet contains a maker's mark for 'SQUARE D COMPANY.' It is located approximately 20' south of the cold-storage shed, approximately 60' north of the Pump/Injector Building, and approximately 20' east of the southeast corner of the headhouse, across from First Avenue.



Figure 183: Western elevation of smaller southern cold-storage shed. Photograph taken 6/25/2019.



Figure 184: Maker's mark on smaller southern cold-storage shed. Photograph taken 6/25/2019.

Energy Control Box

Installed ca. 1980, the large energy control box is set on a concrete slab measuring approximately 5' by 6.' It is located between the Tree Cooler 2 of 3 and the supplemental storage cabinet, and its function is likely related to that of those two adjacent structures.



Figure 185: Front-side of large electric control box. Photograph taken 6/25/2019.



Figure 186: Back-side of large electric control box. Tree Cooler 2 of 3 in background. Photograph taken 6/25/2019.

Shade Canopy

The shade canopy measures approximately 20' by 12.' It is open on all sides and is located above a piece of large machinery with a conveyor that may be a seed-sorting machine. The machine is embossed with the maker's mark 'HOBART.' The shade canopy is located approximately 20' south of the Pump/Injector Building.



Figure 187: Shade canopy and debris pile. Photograph taken 6/25/2019.



Figure 188: Shade canopy with Pump/Injector Building in the background. Photograph taken 6/25/2019.



Figure 189: Large machinery beneath shade canopy. Photograph taken 6/25/2019.



Figure 190: Maker's mark on large machinery. Photograph taken 6/25/2019.

Other Historic Buildings, Structures, Objects, and Sites

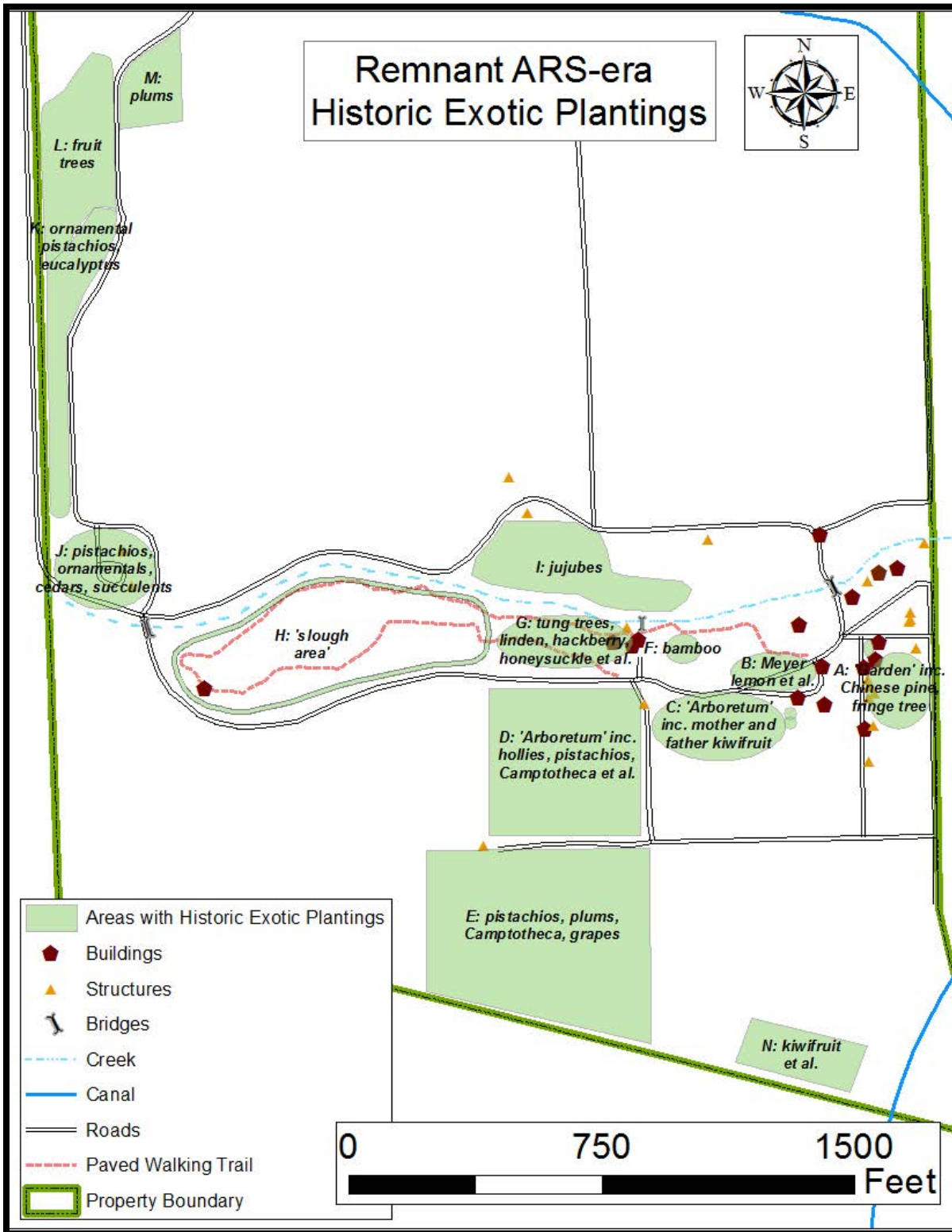


Figure 191: General map of remnant patches of historic exotic plantings that date to the ARS-era of the property.

Agricultural Research Service Historic Exotic Plantings

One of the most singular characteristics of the Chico Plant Introduction Garden (today's Chico Seed Orchard Administrative Site) is its historic exotic plant introductions, some initiated by David Fairchild as early as 1904 and 1905, others collected by Frank N. Meyer between 1905 and 1918. Many of the historic exotic plantings were lost in the transition of the property from the Agricultural Research Service (ARS) to the Forest Service, given a total restructuring of the purpose and mission of the property at large, but 14 distinct areas of historic exotic plantings have been retained on site to the present day. These planting areas that have retained integrity potentially constitute a 'rural historic landscape,' as described in the National Register Bulletin #30: *Guidelines for Evaluating and Documenting Rural Historic Landscapes*. In this bulletin, a rural historic landscape is defined as "a geographical area that historically has been used by people, or shaped or modified by human activity, occupancy, or intervention, and that possesses a significant contribution, linkage, or continuity of areas of land use, vegetation, buildings and structures, roads and waterways, and natural features." The same bulletin further states that "landscapes small in size and having no buildings or structures, such as an experimental orchard, are classified as sites."¹⁸⁷ With approximately 50 acres or less of ARS-era historic exotic plantings still remnant on the property, the areas in which these plantings occur could be classified as sites. Certain particularly significant examples of representative ARS-era historic exotic plantings could also be classified as objects in and of themselves. Taken in combination with the historic buildings and structures to which they are adjacent, the ARS-era historic exotic plantings could also be classified as features of a potential historic district (described in greater detail in the NRHP Eligibility section below). In fact, the historic exotic plantings themselves are the common aesthetic theme that ties the buildings on site into a cohesive design as a rural historic landscape. While the following descriptions are not exhaustive of all ARS-era historic exotic plantings located on site, the locations depicted and described can be confidently presumed to contain the vast majority of these historic exotic plantings. Locations of ARS-era historic exotic plantings can be seen in Figure 28, Figure 94, Figure 191 above, Figure 249, Figure 278, and Figure 326. All of the ARS-era historic exotic plantings on site date to the property's period of significance, 1904-1973. Eight out of 14 historic exotic planting areas are located within the historic core of the property.

Characteristic Features

As shown in Figure 191, there are 14 distinct areas containing ARS-era historic exotic plantings, labelled A through N. These 14 areas all have in common that they are vegetated by exotic plant introductions that trace their provenience to foreign botanical missions of USDA plant explorers, mostly in Eurasia. These 14 areas can be further subdivided into three distinct small-scale "patterns of spatial organization," defined by "vegetation related to [historic] land use."¹⁸⁸ These three patterns are 1.) property beautification, 2.) experimental/random spacing, and 3.) conventional agricultural spacing.

Property Beautification

The ARS-era historic exotic plantings that fall within the property beautification pattern of spatial organization are those demarcated in Figure 191 as garden or ornamental, and were planted for the purposes of beautifying the areas around buildings and roadways. As shown in Figure 191, these areas include:

¹⁸⁷ Linda Flint McClelland et al., *Guidelines for Evaluating and Documenting Rural Historic Landscapes* (Washington, D.C.: U.S. Department of the Interior, National Park Service, Cultural Resources, 1999): 1-2.

¹⁸⁸ McClelland, *National Register Bulletin #30*, 4-5.

- A: ‘Garden’ inc. Chinese pine, fringe tree
- B: Meyer lemon et al.
- F: bamboo
- G: tung trees, linden, hackberry, honeysuckle et al.
- J: pistachios, ornamentals, cedars, succulents
- K: ornamental pistachios, eucalyptus

Area A

Area A, directly north, east, and south of the tankhouse (pumphouse), was described as a garden in a 1936 planview of the property, at a point in time when one of the property’s first wood-frame residences was still located in the area and the introductions of Frank N. Meyer would have been well established, having been planted or transplanted between 1908 and 1918. A number of these Frank N. Meyer introductions are still extant, some with their provenience and introduction date labelled and tagged on the tree itself. One notable Frank N. Meyer plant introduction in this area is the Chinese pine (Figure 127, Figure 192, and Figure 193), which Meyer himself described as “glistening white,” “silvery,” and “beautiful.”¹⁸⁹ Other introductions in this area include a goldenrain tree (likely Meyer, China, 1908), a Chinese fringe tree (Meyer, China, 1908; Figure 194), Chinese holly trees (Farnham, China, 1909; Figure 196), a Mediterranean cypress (Fenzi, Libya, 1922; Figure 195), common myrtle (Westover & Enlow, Turkey, 1935: Figure 98), and others. Though Area A is not curated in its present form, it does represent an early attempt at park-like ornamental vegetation composed of introduced exotic trees and shrubs. More recent genetically improved ponderosa pine are also present in this ‘garden,’ which affects its integrity of design and feeling to a degree, though integrity of location and association remain intact. Area A’s integrity of setting has been to a large degree retained, owing to its location within the historic core of the property.

The only remaining historic building located within Area A is the tankhouse (pumphouse), constructed ca. 1905. This building is surrounded on two of four sides by ARS-era historic exotic plantings. Two additional historic structures are located in Area A: the domestic well directly associated with the tankhouse (pumphouse) and the east well, installed in 1962. Area A is representative of vegetation related to historic land use on the property as an example of ornamental vegetation for the purpose of beautifying roadways and a former residence, which today represents a potential historic archaeological site.



Figure 192: Chinese pine, likely collected by Frank N. Meyer in China in 1908. Park-like setting in background. Photograph taken 6/25/2019.



Figure 193: Detail of the bark of the Chinese pine, imported by Frank N. Meyer. Meyer described this particular tree as “glistening white,” “silvery,” and “beautiful.” Photograph taken 6/25/2019.

¹⁸⁹ Meyer, “Letters of Frank N. Meyer,” accessed April 15, 2020, <https://archive.org/details/lettersoffranknm04fran>.



Figure 194: Chinese fringe tree, collected by Frank N. Meyer in China in 1908. The Tree Cooler 2 of 3 is on the left. Photograph taken 6/25/2019.



Figure 195: A Mediterranean cypress introduced from Libya by E.O. Fenzi in 1922. Tree Cooler 3 of 3 (Willamette Barn) is at lower right. Photograph taken 6/25/2019.



Figure 196: A grove of Chinese holly trees, collected from China by J.N.W. Farnham in 1909, with the Storage Building (Warehouse) at back left. Photograph taken 6/25/2019.



Figure 197: Less than 50-year-old genetically improved ponderosa pine are also present in the 'garden.' Note the grafted stumps at the base of the trees. Photograph taken 6/25/2019.

Area B

Heading west from Area A, the trees and shrubs planted in the interior median of the parking area at the northwest corner of the headhouse are also examples of property beautification. When this area was planted, likely soon after construction of the headhouse in 1932, the entrance to the headhouse was located on its western elevation, and these trees and shrubs would have constituted the primary ornamental vegetation of the headhouse building cluster. This interior median is a portion of Area B: Meyer lemon et al. (as depicted in Figure 191).

Also part of Area B, across the access road to the northwest of the interior median described above and west of the saw/paint storage building (fumigation storage), is a shaded field containing the only Meyer lemon observed in the course of the survey that was conducted in support of this Determination of Eligibility. This dwarf hybrid between a lemon and a mandarin orange (Figure 124 and below) was an ornamental potted plant in China, introduced to Chico by Frank N. Meyer in 1908, that came to thrive in the citrus districts of California, Florida, and Texas. With a thin edible rind, the Meyer lemon does not ship well, making it a specialty item wherever it is cultivated, used for culinary, aromatic, and ornamental purposes today. It has in recent decades been popularized by celebrity chefs, such as Martha Stewart among others. The shaded field, in which the sole Meyer lemon occurs, as of 1924 contained a building sometimes referred to as the 'Savoy,' which likely served as a guest house for visiting researchers and plant explorers. The Meyer lemon in this field likely once adorned the grounds of this building as an example of property beautification. The site of the 'Savoy' today represents a potential historic archaeological site. The Meyer lemon itself is highly representative of the property's significant

association with important contributions to regional and national agricultural industries, and this Meyer lemon has become a historic object in and of itself.

Area B as a whole has retained integrity of location, design, and association. It has lost some integrity of materials and feeling with the removal of the 'Savoy' and the reconstruction of the headhouse, but it has retained its integrity of setting by virtue of being located within the property's historic core.



Figure 198: The sole Meyer lemon observed on property during survey. Center Lane in the background. Photograph taken 6/25/2019.



Figure 199: Detail of the wide bole of the Meyer lemon's rootstock, which is a better indication of the tree's age than any individual stem. Photograph taken 6/25/2019.

Areas F and G

There are a number of ARS-era historic exotic plantings in the immediate vicinity of the office building cluster that could readily be characterized as examples of property beautification, including the linden tree (Meyer, Republic of Georgia, 1910) located between the office building and the ROP Classroom (Figure 32 and Figure 53). The bamboo grove east of the office building cluster, established ca. 1909, likely began as an experimental planting, but by 1924 was portrayed on a feature map as a part of what appears to be an intentional landscaping plan (Figure 37). Other examples of ARS-era exotic plantings that may have begun as experimental efforts, but were later subsumed into the landscaping of the office building cluster include a Russian hackberry tree (below), a Maack's honeysuckle from England (Figure 73), and a number of tung trees, also known as China wood oil trees (Figure 84, Figure 89, and below). In the words of P.H. Dorsett, the first administrator in charge of the Chico Plant Introduction Garden, "from the seed of the tung oil tree (*Aleurites fordii*) an oil is made which the paint manufacturers of this country consider one of the best drying oils known to the trade."¹⁹⁰ Tung trees were imported to the Chico Plant Introduction Garden by Frank N. Meyer as early as 1906, and several thousand were propagated on site. It appears though that at least some of the extant tung trees in this area do not date to the early 20th century, but are the product of natural succession via the original introduced trees dropping seed which subsequently self-established. Two palm trees that flank the southern elevation of the office building (laboratory) appear to have been established on site by 1924 (Figure 37), though today they closely complement the faux-Mediterranean ca. 1941 redesigned southern addition to the building. Figure 55 shows an example of one ARS-era planting in the vicinity of the office building/laboratory that has been lost, but others remain that are not identified explicitly in this report. Though integrity of feeling has been modified over time, the ARS-era historic exotic plantings in the direct vicinity of the office building cluster,

¹⁹⁰ Dorsett, "The Plant-Introduction Gardens," 139.

bolstered by their association with the office building cluster itself, have maintained integrity of location, design, and association. They have also retained their integrity of setting by virtue of being located within the property’s historic core.



Figure 200: Bamboo grove established ca. 1909. Located east of the Office Building (Laboratory). Photograph taken 8/26/2015 from the paved walking trail located south of Comanche Creek. Photograph courtesy of Joel Little.



Figure 201: Russian hackberry tree located just north of the parking area associated with the office building cluster. Photograph taken 6/24/2019.



Yearbook U. S. Dept. of Agriculture, 1916.

PLATE XXIV.

FIG. 2.—SEVERAL THOUSAND YOUNG TUNG-OIL TREES.

Figure 202: Detail of a plate from the 1916-1917 USDA yearbook, showing “several thousand young tung-oil trees” in production at the Chico Plant Introduction Garden.



Figure 203: A small-diameter tung tree, with multiple stems loaded with fruit, grows directly behind the ROP Classroom (utility building/garage). Both location and diameter indicate that this tree is not older than 50 years. Photograph taken 6/24/2019.

Area J

Another area at which ARS-era historic exotic plantings would readily be characterized as examples of property beautification is that of today's old residence/site host area (Area J). Area J has served as the entrance to the property since the opening of the Chico Plant Introduction Garden in 1904. As early as 1924, there was a distinct irrigated landscaping plan around the residence that was located in this area until its removal between 1975 and 1983.



Figure 204: Detail from a 1924 feature map of the property, showing the landscaping plan around the present-day old residence/site host area (Area J). Note barn and poultry shed on site in 1924 as well.

The ARS-era plantings in Area J include ornamental pistachio trees, a large oak tree, a palm tree, cedars, flowering shrubs, and succulents. There is also in this area the concrete-and-brick foundation of the old residence, constructed ca. 1907, which today represents a potential historic archaeological site. Area J is representative of vegetation related to historic land use on the property as an example of ornamental vegetation for the purpose of beautifying roadways and a former residence. The removal of the historic buildings in this area, however, has impacted integrity in terms of design, materials, workmanship, and feeling; though the ARS-era plantings themselves have retained integrity of location and association. Since Area J is outside of the property's historic core, and in the near vicinity of post-1974 genetically improved ponderosa pine seed orchards, it has also lost its integrity of setting.



Figure 205: Ornamental tree located at the site of the old residence/site host area. Photograph taken 6/26/2019.



Figure 206: A grove of cedars, planted at the corner of the old residence building, of which the concrete-and-brick foundation can be seen in the foreground. Photograph taken 6/26/2019.



Figure 207: A handsome flowering shrub at the old residence/site host area. Photograph taken 6/26/2019.



Figure 208: Detail of the concrete-and-brick foundation of the old residence building. Photograph taken 6/26/2019.



Figure 209: A large oak tree at the old residence/site host area. Photograph taken 6/26/2019.



Figure 210: The branches of an ornamental shrub wrap around a palm tree trunk. Photograph taken 6/26/2019.

Area K

Immediately north from Area J, on the west side of today's West Orchard Road, is a row of ornamental pistachio trees, depicted in Figure 191 as Area K. Frank N. Meyer collected cuttings of ornamental pistachios on his first expedition to China from 1905-1906, where they grew around ancient temples in the country's western hills.¹⁹¹ The ornamental pistachios growing on the west side of today's West Orchard Road (formerly Pistacia or Pistache Avenue), are what remains of "a trial avenue a quarter of a mile long, planted at the Chico Garden in 1910." Already by 1916, P.H. Dorsett said of this trial avenue that "the peculiar beauty of the Chinese pistache [sic]... already makes an excellent appearance."¹⁹² Figure 12 shows a view of Pistacia Avenue in the 1930s. Known for their dramatic foliage and propensity to live to an old age, thousands of young ornamental pistachios were distributed to parks throughout the country in the early 20th century.¹⁹³ J. Everett Morrow, superintendent of the garden during two periods from 1911 to 1916 and from 1921 until 1951, said of the ornamental pistachio: "We had one at the entrance of the Plant Garden, and it shone up brilliantly in the Fall, if water was kept off the trees, they would color up brilliantly, red, and purple, and gold, but if you watered them they stayed green and fell without any coloration."¹⁹⁴ Today, ornamental pistachios only occur on the western side of West Orchard Road, though aerial photography from 1975 indicates that the removal of the ornamental pistachios from the eastern side of the road pre-dated transfer of the property to the Forest Service. The eastern side of West Orchard Road is today planted with a genetically improved ponderosa pine seed orchard (see cover page and Figure 211 below). This impacts the avenue trees' integrity of design, feeling, and setting, though its location and association remain intact. At least one large-diameter eucalyptus tree was also planted on the west side of today's West Orchard Road.



Figure 211: View northward along West Orchard Road (formerly Pistacia Avenue), with historic ornamental pistachio trees on the left and modern genetically improved ponderosa pines on the right. Photograph taken 6/26/2019.



Figure 212: Eucalyptus tree planted along West Orchard Road, surrounded by ornamental pistachios. Photograph taken 6/26/2019.

¹⁹¹ Graham, "Plant Introduction Garden at Chico," 17.

¹⁹² Dorsett, "The Plant-Introduction Gardens," 140.

¹⁹³ Ibid.

¹⁹⁴ Morrow, "Recollections of J. Everett Morrow," 22.

Experimental/Random Spacing

The ARS-era historic exotic plantings that fall within the experimental/random spacing pattern of spatial organization include those demarcated as ‘arboretum’ in Figure 191 on page 105 above, as well as the ‘slough area.’ They do not exhibit any regular pattern of landscaping or design, but represent significant and sometimes uncommon examples of ARS-era research and projects of interest. As shown in Figure 191, these areas include:

- Area C: ‘Arboretum’ inc. mother and father kiwifruit et al.
- Area D: ‘Arboretum’ inc. hollies, pistachios, and other exotics
- Area H: ‘slough area’

Areas C and D

Across the access road to the south of Area B and west of the shadehouse, are the mother and father kiwifruit vines, planted on site ca. 1935 (Figure 125, Figure 126, and below). These kiwifruit vines were the first two of their kind successfully propagated on North American soil. They were collected in New Zealand ca. 1935 by USDA plant explorer Hayward R. Wright, after whom the commercial ‘Hayward’ cultivar of the fruit is named. The kiwifruit was introduced into New Zealand in 1904 from a single collection of seed, likely with a provenience from south central China.¹⁹⁵ Previously known as the Chinese gooseberry, grafted plants of kiwifruit were first sold from New Zealand nurseries in the 1920s. While a large part of the horticultural program that converted the Chinese gooseberry into the modern-day commercial kiwifruit occurred in New Zealand, nevertheless Chico was its first port of entry into North America. From rootstock in Chico, the large-fruited ‘Hayward’ cultivar kiwifruit was distributed to growers throughout agricultural regions of California in the 1960s.¹⁹⁶ The mother and father kiwifruit vine served as the progenitors to what grew into a domestic and export industry in California beginning in the 1970s. The mother kiwifruit vine is still producing fruit a full 85 years after its introduction, making it the oldest-producing kiwifruit vine in the western hemisphere. Historically, these two kiwifruit vines began as experimental plantings and the area in which they occur, Area C, falls firmly within the experimental/random spacing pattern of spatial organization. Over time though, they have been incorporated into the property beautification pattern as historic objects in and of themselves. In 2013, the vines were buttressed by wooden trellises constructed by a Boy Scout project.



Figure 213: Mother kiwifruit vine, loaded with fruit which can be seen in Figure 126, on its wooden trellis constructed in 2013. Photograph taken 6/25/2019.



Figure 214: The father kiwifruit vine, climbing up a nearby tree. Photograph taken 6/25/2019.

¹⁹⁵ A.R. Ferguson, “New Temperate Fruits: *Actinidia chinensis* and *Actinidia deliciosa*,” in *Perspectives on New Crops and New Uses*, ed. J. Janick (Alexandria, VA: ASHS Press, 1999), 342-347.

¹⁹⁶ James A. Beutel et al., “A New Crop for California: Kiwifruit,” *California Agriculture* (October 1976): 5.

The mother and father kiwifruit vines are located at the eastern margin of Area C, referred to as ‘Amenity Plantings’ as of approximately 1979 and as an ‘arboretum’ at least as early as 1993, and possibly much earlier. Care has been taken over time to preserve the historic exotic vegetation of this area, as well as the adjacent ‘arboretum’ of Area D across South Orchard Road (the access road to the west). Area D was referred to as an ‘arboretum’ in a site map of the property dating to 1936 (Figure 16). During the overhaul of the property in its transition to becoming the Chico Tree Improvement Center after 1974, it was said of the kiwifruit vines that “every effort should be taken to protect these plants during the development of the tree improvement shadehouse.” On one site plan from 1979, it specifically states “DO NOT DISTURB THESE TREES,” referring to the mother and father kiwifruit vines as well as two rows of vegetation to their west. Additional ARS-era historic exotic plantings in the two ‘arboreta’ areas (Areas C and D) include Chinese hollies, pistachio trees, and likely *Camptotheca acuminata* trees (according to a site map from 1979). Areas C and D are representative of the experimental/random spacing pattern of spatial organization. It seems likely that pre-1974 managers of the Chico Plant Introduction Garden used these two areas as places to plant and preserve vegetation of interest that did not fit into the scheme of mass propagation for purposes of distribution that characterized irrigated fields employing more conventional agricultural spacing elsewhere on the property. These areas are today generally associated with the informational kiosk, though this small-scale feature was installed much later in the property’s history, sometime between 1984 and 1992. These arboreta, as well as the mother and father kiwifruit vines, have retained a preponderance of integrity in terms of location, design, setting, and association.



Figure 215: Flowering exotic plant supported by a trellis, located just south of the mother and father kiwifruit vines. The shadehouse is in the background at left. Photograph taken 6/25/2019.



Figure 217: A grove of Chinese holly trees, with the office building (laboratory) in the background. Photograph taken 6/24/2019.

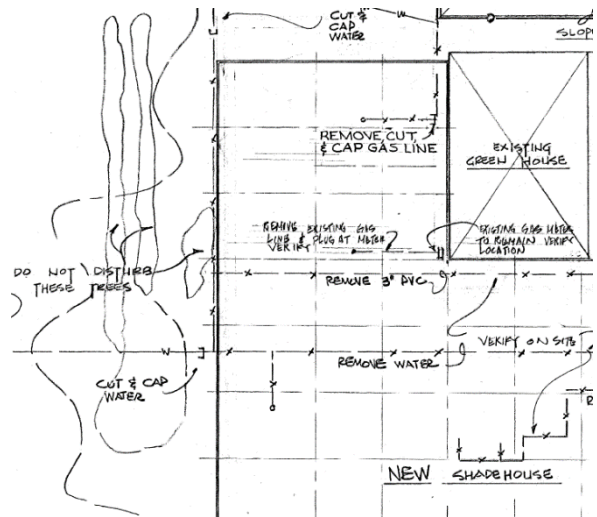


Figure 216: “DO NOT DISTURB THESE TREES” on left, referring to the mother and father kiwifruit vines and other ARS-era exotic plantings. From a 1979 site plan.



Figure 218: Stems sprouting from a stump of what might be a *Camptotheca acuminata* tree. Photograph taken 6/25/2019.

Area H

West of the office building cluster is the bulk of the ‘slough area,’ or Area H. Robert Smith, a research horticulturist at the Chico Plant Introduction Garden from 1957 to 1974, stated in a 1991 interview that after imported exotic plants had been evaluated on site and the results had been published, then the general approach of the facility was to dispose of plants that were not selected for further propagation, given the continual influx of new material; “however the station planted many specimens in the slough area to save them.”¹⁹⁷ As of 1979, when the USDA Forest Service was making plans for its overhaul of the property, it was stated of the ‘slough area’ that “generally, the botanically significant species and unusual wildlife occupy the Edgar Slough area which will remain a natural area.” This statement referred to riparian habitat for native wildlife, though the fact that the vegetation of the ‘slough area’ remained unaltered at this time is a strong indication that much of that vegetation is either the product of ARS-era introductions from foreign botanical missions or resembles native vegetation present during the property’s period of significance. A property map from 1994 describes this area as an “ARS Planting Preservation Area,” further indicating that it is likely to contain ARS-era historic exotic plantings that may not be commonly found elsewhere. This area is representative of the experimental/random pattern of spatial organization, and though it is grown in with native riparian vegetation, this is the condition in which it would likely have been found in the first half of the 20th century as well. Therefore this area has retained a preponderance of integrity.

Conventional Agricultural Spacing

The ARS-era historic exotic plantings that fall within the conventional agricultural spacing pattern of spatial organization include those that were part of active research or propagation programs as of the time of the closing of the Chico Plant Introduction Garden as a horticultural facility in 1973. These areas were planted in rows that maximized space and water requirements of the plants under investigation. This technique is not uncommon among agricultural growers of California’s Central Valley, but the plants themselves represent facets of the work that went on at the Chico Plant Introduction Garden, especially in its later years of operation from the 1950s until 1973. As shown in Figure 191, these areas include:

- E: pistachios, plums, camptotheca, grapes
- I: jujubes
- L: fruit trees
- M: plums
- N: kiwifruit et al.

Area E

Approximately 7.5 acres of planted fields south of the south well, Area E as depicted in Figure 191, contain ARS-era historic exotic plantings that were laid out using conventional agricultural spacing. Part of Area E likely corresponds with the ten acres that were reserved for pistachio seed and budwood production and nursery stock, and that were permitted to the Pistachio Growers Association of San Jose for a period of five years following transfer of the property to the USDA Forest Service (1974-1979). The mother ‘Kerman’ pistachio tree, planted ca. 1931, the genetics of which are present in nearly every commercial pistachio tree in California, Arizona, and New Mexico, was likely located in this orchard. It is said to have died around

¹⁹⁷ Smith, “Interview with Robert Smith 7-25-91,” 4.

2012 and to have been cut down in 2013.¹⁹⁸ Other plantings present in Area E have included a plum tree orchard and a *Camptotheca acuminata* production orchard, though much vegetation in this area has been cleared in recent years. What was the *Camptotheca acuminata* orchard was entirely cleared beginning around 2010, and as of 2013 the area became host to large slash piles that were still present in 2019. It is uncertain how much of the plum orchard may remain. Grape vines have also grown voluminously in the area. While the ‘Kerman’ pistachio is perhaps the most notable graduate of the Chico Plant Introduction Garden, Area E has not maintained integrity over time. Parts of it have been cleared of all surface vegetation (Figure 221 below), and other parts have not been maintained, allowing excessive overgrowth, such as the grape vine mound pictured below.



Figure 219: Row of ornamental pistachio trees planted south of the south well. Photograph taken 6/26/2019.



Figure 220: Massive mound of grape vines located south of the south well. Photograph taken 6/26/2019.



Figure 221: Satellite imagery from May 2018, showing slash piles in the field that once hosted a *Camptotheca acuminata* production orchard. Image courtesy of Google Earth.

¹⁹⁸ Eric Hansen, “In Search of the Mother Tree,” *Aramco World* 64, no. 6 (November/December 2013), accessed December 11, 2019, <https://archive.aramcoworld.com/issue/201306/in.search.of.the.mother.tree.htm>.

Area I

Area I is located south of Comanche Road and north of Comanche Creek across from the office building cluster. Area I contains multiple rows of Chinese jujube trees, also known as T'sao or Chinese dates. Specimens of jujube arrived at the Chico Plant Introduction Garden from China at least as early as 1907, and were propagated on site at least as early as 1910. Hopes were high at Chico that the jujube had great potential to become a popular commercial crop in the United States. David Fairchild wrote a leaflet entitled "The Chinese Jujube" around 1914, and P.H. Dorsett said of the fruit: "The jujube, *Ziziphus jujuba*, from China, is possible as promising a plant commercially for California and the semi-arid South and Southwest as any of the other valuable crop and ornamental plants that have been introduced from the Far East."¹⁹⁹ Though the trees were well adapted to the semi-arid climate of California, and produced prolific amounts of fruit, they failed to attract the attention of the North American palette. According to David Fairchild: "Ripe jujubes, when eaten raw, are amusing rather than delicious, and have a crisp, sprightly flavor different from other fruits."²⁰⁰ Nevertheless, research and experimentation on different strains and varieties of jujube, of which hundreds occur in its native China, continued unabated until the closure of the Chico Plant Introduction Garden as a horticultural facility in 1973. Area I was planted with jujubes as of 1916, at which point it was stated that "this tree thrives remarkably well. The fruit is borne in quantity upon the deciduous leafy twigs."²⁰¹ Area I is labelled in 1924 as a 'test orchard,' and in 1936 as a 'nursery.' It is likely that the remnant orchard on site continued to inform research that went on at Chico from approximately 1957 to 1971. Though with a slightly overgrown understory, this jujube orchard has retained integrity and continues to be furtively visited by locals of Chinese descent during harvest season.



Figure 222: Jujube tree, within a jujube orchard located north of Comanche Creek and south of Comanche Road. Photograph taken 6/24/2019.



Figure 223: A millet-and-jujube cake, photographed by Frank N. Meyer during an expedition to China in 1915.

¹⁹⁹ Dorsett, "The Plant-Introduction Gardens," 139.

²⁰⁰ Fairchild, *The World was my Garden*, 247.

²⁰¹ Dorsett, "The Plant-Introduction Gardens," Plate XXIV.

Areas L and M

Areas of remnant ARS-era historic exotic plantings located on the property include a plum orchard (Area M) and other fruit trees (Area L), planted north of the ornamental pistachio trees lining the west side of West Orchard Road (Area K) and south of the Search-and-Rescue Headquarters Building Cluster. Plums were propagated at the Chico Plant Introduction Garden from at least 1939 until the closing of the garden as a horticultural facility in 1973. As of 1956, there were 200 varieties of plum on site, as well as 165 miscellaneous seedlings, and it was deemed of all the stone fruits on site “to offer the most promise of introducing foreign varieties suitable for direct production in the United States.”²⁰² The Methley plum is one such Japanese variety that graduated from the Chico Plant Introduction Garden and went on to become a relatively common commercial fruit tree in nurseries across much of the United States. These remaining orchards, however, have not been maintained in recent decades and have become considerably overgrown, which has compromised their integrity of design, feeling, and workmanship, though they maintain integrity of location and association. Located outside of the property’s historic core and directly adjacent to post-1974 seed orchard plantings, they have lost integrity of setting as well.



Figure 224: Detail of an aerial photograph from August, 1978, with plum orchard on the upper right and other fruit trees to the left.

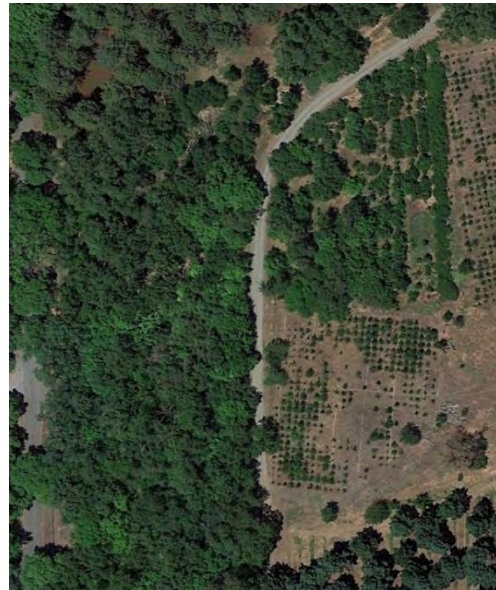


Figure 225: Google Earth image from May, 2018, showing the present-day overgrown conditions of the orchards shown in Figure 223.

Area N

This small patch of historic kiwifruit plantings dates to between approximately 1938 and 1963, when active kiwifruit breeding investigations were occurring on site. Post-1974, the area was preserved as ‘wildlife habitat.’ Despite being overgrown, the area maintains integrity of location, design, and association, though its setting and feeling have been drastically altered both by the post-1957 construction of the Butte Creek and Little Chico Diversion Canal and Levee and by the post-1974 conversion of the property into that of a source-identified genetically-improved native seed orchard. Located outside of the property’s historic core and directly adjacent to post-1974 seed orchard plantings, this area has lost a preponderance of integrity.

²⁰² Hodge, “Federal Plant Introduction Gardens,” 93-95.

Barn; #2626

Constructed in 1940, the barn was built in a utilitarian, minimal traditional style. It is a wood-framed, square-shaped, one-and-a-half story building with a front-gabled roof and a concrete foundation. It also has an unenclosed shed-roof porch on its northern elevation. The building's main façade is oriented towards the west. The barn is located on the north side of Comanche Creek, approximately 375 feet north of the headhouse.

Architectural Description

The barn measures approximately 28' 2" by 28' 4," encompassing 800 ft², not including its add-on porch. The porch measures approximately 8' 11" by 28' 4," encompassing another 150 ft², for a total of 950 ft². The barn has a front-gabled roof with a medium pitch, and is sheathed with horizontally overlapping composite shingles, i.e. overlapping from back gable to front gable as opposed to downslope from the ridge of the roof to the eave. The northern portion of the roof is covered in a thick mat of vegetative duff. The eaves are unboxed with tongue-and-groove boards atop exposed rafters. Traces of sheet-metal edging are evident along some portions of the eave on the southern elevation. There are no roof projections. The Barn sits atop a concrete slab foundation. Its walls are clad with vertical wooden board-and-batten siding.



Figure 226: Horizontally overlapping roof shingles. Photograph taken 6/25/2019.



Figure 227: A thick mat of vegetative duff sits atop the northern portion of the Barn's roof. Photograph taken 6/26/2019.

The barn has two pedestrian entrances and one large bay door. The primary pedestrian entrance and the bay door are located on the building's western elevation. The primary pedestrian entrance is a wooden door located at the southwestern corner of the building. It contains five horizontal panels and original hardware. The bay door is a sliding door, clad in board-and-batten, that comprises much of the building's western elevation. When opened, it would obscure the one window on the building's western elevation. That window is single-paned within a wooden frame with wooden casing and a simple wooden sill. The wooden casing holds in a wire-mesh screen. At the northwestern corner of the building on the western elevation are two brackets and one drilled hole that served an uncertain purpose.



Figure 228: Primary pedestrian entrance door with five horizontal panels. Photograph taken 6/25/2019.



Figure 229: Sliding bay door and single window of western elevation. Note the two brackets and one drilled hole on the left. Photograph taken 6/26/2019.

The eastern elevation of the barn is fitted with one large solid metal door that does not appear to be original to the building. The eastern elevation also contains one boarded-up window with a wooden frame within wooden casing. The southern elevation contains three windows, whose panes have been replaced with plastic fittings set within wooden casing. The northern elevation contains no windows or doors, but does have an unenclosed porch addition that was added on to the building sometime after 1979. The porch addition has a flat transitional shed roof of corrugated metal set atop wooden braces. It is fitted with modern hardware and set atop concrete footers. Both the porch and the interior of the barn are today used for storage of building materials, pallettes, irrigation pipes and joints, and other goods. The interior of the barn is composed of two rooms: one large storage area and one much smaller front 'office' area (see Figure 239).



Figure 230: Post-1979 porch addition. Photograph taken 6/25/2019.



Figure 231: Metal T-brace attaching wooden beams of porch addition. Photograph taken 6/25/2019.

Landscape Setting

The barn occurs at the boundary of the setting of the property's 30-acre historic core, vegetated by eight areas of ARS-era historic exotic plantings that comprise a common aesthetic theme and a cohesive design as a rural historic landscape. Directly across Comanche Road from the barn occurs the property's general setting of 131 acres of source-identified genetically improved, mostly native and some nonnative trees for the reforestation program of the Pacific Southwest Region of the USDA Forest Service.

The barn is set apart from the other building clusters over a bridge on the north side of Comanche Creek at a t-intersection of gravel roads (Comanche and East Orchard) near the eastern boundary of the property. It is adjacent to historic jujube plantings located west of the barn and north of Comanche Creek. The barn is situated south of post-1979 plantings of ponderosa pine. Prior to construction of the barn, the area was used as a horse pasture and as an explosive powder storage area for removal of tree stumps within agricultural fields. The area retains that agricultural feel today by way of a mowed field to the barn's south and east, which is surrounded by woodlots along the creek that obscure old farm equipment. Woodlots are also present along the property boundary to the east of the barn.

Modifications

The barn has retained much of its form and feel, despite some modifications. The porch on its northern elevation was added on sometime after 1979. Some roof shingles have been replaced on the southern portion of the roof, and others have fallen off (see Figure 226). The metal door on the eastern elevation is not original, and may have been installed where previously there was no door. Glass panes have been removed from the barn's three windows on its southern elevation, and replaced with plastic fittings, and the one window on the eastern elevation has been boarded up.

Integrity

Despite the non-structural modifications described above, the barn retains integrity of location, materials, workmanship, and feeling. Its design has been altered, though not compromised, with the addition of the unenclosed porch. Its setting and association have been altered as well by the transition of the property from plant introduction garden to seed orchard, though remnants of the original setting and association are still present in the near vicinity.



Figure 232: Primary western elevation of Barn, with unenclosed porch addition on the left. Photograph taken 6/25/2019.



Figure 233: Southern elevation of Barn, with three windows that have been fitted with plastic. Photograph taken 6/25/2019.



Figure 234: Eastern elevation of Barn with one solid metal door and one boarded-up window. Photograph taken 6/26/2019.



Figure 235: Northern elevation of Barn with unenclosed porch addition. Photograph taken 6/25/2019.



Figure 236: Hardware fixture hanging from wire at the southeastern corner of building. Photograph taken 6/25/2019.



Figure 237: View of board-and-batten siding and tongue-and-groove boards that remain intact below the both sides of the building's roof. Photograph taken 6/25/2019.



Figure 238: View of interior wood framing of the Barn. Photograph taken 6/26/2019.



Figure 239: Small front 'office' area of the Barn. Photograph taken 6/25/2019.

Pumphouse at Creek (Butte Creek Pumphouse); #1645

Constructed in 1924, the Butte Creek Pumphouse was made possible by a water right that was acquired with the land purchased from R. and H. Stone in 1917. A right-of-way was subsequently acquired from El Oro Dredging Company for installation of an off-property water pipeline. The pumphouse is also located off-property, though the building itself is presumably still federal property and it continued to be nominally maintained in the 1980s, after which the pump itself was stolen from within the building. The pumphouse is an electric pumping plant measuring 6 feet by 6 feet, encompassing 36 square feet. It has a corrugated iron roof and corrugated iron walls, and is set upon a concrete foundation. In 1937, it was equipped with a sump cover and a redwood flume measuring 4 feet by 12 feet that extended to the edge of Butte Creek. It was also equipped with adjacent irrigation standpipes that were still standing as of 2018. The Butte Creek Pumphouse diverted water into 17,325' of underground concrete water pipes, as well as a number of above-ground surges, vents, and valves, that provided irrigation water to the southeast corner of the Chico Plant Introduction Garden from 1924 until at least 1957, when work was initiated on the Butte Creek and Little Chico Diversion Canal, essentially severing the previous access route to the pumphouse and its associated irrigation system.

The building is inaccessible today and obscured by overgrown vegetation. It is located approximately 750 feet from the southeast corner of the present-day Chico Seed Orchard property boundary, across the Butte Creek and Little Chico Diversion Levee and Canal. It is situated on the north bank of Butte Creek, just north of Durham Dam and just south of a chain-link fence erected by the large mining operation that neighbors the present-day Chico Seed Orchard Administrative Site to the east. Access to the site is impeded by a large metal fence that was erected by Butte County in recent years. The landscape setting of the building today is highly industrial. The Butte Creek Pumphouse retains integrity of location. Its integrity of materials and design are compromised given its history of vandalism and lack of maintenance in recent decades. It lacks integrity of setting, feeling, and association.



Figure 240: Butte Creek Pumphouse and adjacent irrigation standpipes. Photograph taken on November 16, 1959.



Figure 241: Detail of 1924 Feature Map, showing Durham Dam at bottom right, Butte Creek at right, "electric pumping plant" (i.e. the Butte Creek Pumphouse) just left of Butte Creek, and some of the fig, jujube, and citrus orchards irrigated by this supplementary irrigation system.

Irrigation Standpipes

These structures may date to as early as 1924 or as late as 1957. They are hollow concrete cylinders, poured in multiple courses, that function to control the flow and availability of gravity-fed piped irrigation waters at strategic locations. One is located just south of Comanche Road, approximately 300 feet west of the Barn and 265 feet north of Comanche Creek, not far from a stand of ARS-era jujube trees. This standpipe is equipped with a metal rung ladder and a manual operating mechanism. Another is located approximately 50 feet northeast of the Shop/Storage Building (Old Search-and-Rescue), just south of Comanche Creek. This one lacks either ladder or operating mechanism. There may also be another standpipe at the far southeast corner of the property, which was installed in April of 1957. While there is ample evidence throughout cultivated portions of the property of the modern irrigation system that was installed on site beginning in 1979, these standpipes may represent some of the last above-ground vestiges of the Phelan-Parrot Irrigation System that was installed in 1924, and continued to be utilized, maintained, and upgraded through 1957. 10" and 12" underground concrete pipes may still connect these standpipes to surges, vents, and valves that delivered irrigation water to cultivated fields across the property. The Phelan-Parrot Irrigation System (Figure 16) was named in honor of James D. Phelan, then mayor of San Francisco, and John Parrot, a San Francisco businessman, who both contributed generously to the acquisition of the land.²⁰³

While these standpipes have retained integrity as individual structures and date to the property's period of significance (1904-1973), they are components of a larger gravity-fed irrigation system, the Phelan-Parrot irrigation system, that has not retained integrity since it was replaced with a more modern system starting in 1957. The Phelan-Parrot irrigation system was not singular or unique in its construction and design, but replicated other systems commonly in use in the agricultural regions around Chico, CA.



Figure 242: Concrete irrigation standpipe just south of Comanche Road, 300' west of the Barn, with metal rung access ladder. Photograph taken 6/25/2019.



Figure 243: Concrete irrigation standpipe on south bank of Comanche Creek at far eastern boundary of property, with Shop/Storage Building (Old Search-and-Rescue) in back right of photograph. Photograph taken 6/25/2019.



Figure 244: View looking into concrete irrigation standpipe south of Comanche Road, with manual operating mechanism descending into its depth. Photograph taken 6/25/2019.

²⁰³ Jones & Stokes Associates, Inc., *Chico Plant Introduction Garden*, 1.

East Well

The east well was installed in 1962 in an effort to upgrade the property's irrigation system away from a dependence on diverting surface waters of Comanche Creek and Butte Creek, following construction of the Butte Creek and Little Chico Diversion Canal and Levee. It was the second or third well on the property, installed at a time when the Tankhouse (Pumphouse) well was dedicated to domestic use, as opposed to irrigational use. The east well was described as a "deep well" and as a "large pump," before installation of the industrial-grade north and south wells around 1979. It is composed of metal irrigation pipes and joints. The main well pipe is encased in concrete at ground surface.

The setting of the east well had been modified over time. As of 1936, the area was referred to as a 'garden.' While the east well is still situated adjacent to historic exotic plantings to its south, it is located just 20 feet east of the Open Garage installed in 2005. Today the east well fronts most notably onto the Shop Road vehicle loop, which is composed of gravel surfacing with some sparse grassy vegetation and which is characterized by the industrial feel of a maintenance yard. The east well is bordered to the east by the chain-link fence of the eastern boundary of the property. A large gravel-lined canal that was constructed in 1957 is visible beyond the fence.

The east well retains integrity of location, design, materials, workmanship, and association. Though located within the property's historic core, the east well is today directly adjacent to the Shop Road Maintenance Yard and the Butte Creek and Little Chico Diversion Canal, which have modified the setting and feeling of the structure.



Figure 245: The east well, with Shop Road vehicle loop and chain-link fence of eastern property boundary in the background. Photograph taken 6/25/2019.



Figure 246: The east well with some ARS-era exotic plantings to its south in the background. Photograph taken 6/25/2019.

Old Residence/Site Host Area Well

It was not possible to pinpoint the date of construction of this well and pump, except to state with good confidence that it was installed before transfer of the land in 1974 from the Agricultural Research Service of the USDA to the Forest Service of the USDA. It appears on an aerial photograph from 1975 with planning notations from approximately 1979, when major infrastructural upgrades to the new Chico Tree Improvement Center were undertaken in earnest. Therefore it is highly likely that it pre-dates 1974, and it may date as far back as 1941 when an on-site water system and pump were installed somewhere on the property.

Immediately visible upon entering the property, this area hosted one of the original 1907 wood-frame residences on site. Already by 1924, it represented one of the most developed areas on the property, with a residence, a barn, a chicken coop, one additional outbuilding, pear trees, a hedgerow, and an adjacent irrigated field. The barn and chicken coop were removed by 1936, and an additional outbuilding had been added by 1962. The 1907 residence itself was moved off-property between 1975 and 1983.

The well is composed of a metal casing within a surficial concrete pad, with a small water tank affixed and metal piping that connects with the irrigation system of the property's front entrance. While the well remains, and continues to provide irrigation water to the front entrance of the property and to the site host area, its landscape setting has been altered considerably. Not only has the overall landscape setting of the 209-acre property been converted from that of an exotic plant introduction garden to that of a seed orchard of source-identified genetically improved trees for the reforestation program of the Pacific Southwest Region, but the specific environs of this well have been highly modified as well. Two mobile homes, referred to as barracks, occupied the site from the 1990s until their removal in 2017 and 2018. During this time, the area was also developed with picnic tables, campsite grills, and utility hook-ups. The site is now occupied by a privately owned recreational vehicle trailer and a small storage shed. Historic exotic plantings remain in the area, as well as a concrete-and-brick foundation of a previous building. While the well retains integrity of location, design, and materials, with removal of the historic building cluster it was installed to support, it has lost integrity of setting, feeling, and association.



Figure 247: The old residence/site host area well. Photograph taken 8/20/2015. Photograph courtesy of Joel Little.



Figure 248: Present-day setting of the old residence/site host area well, with irrigation lines in the mid-ground. The well itself is barely visible at back left. Photograph taken 6/26/2019.

Non-historic Buildings and Structures of the Shop Road Maintenance Yard

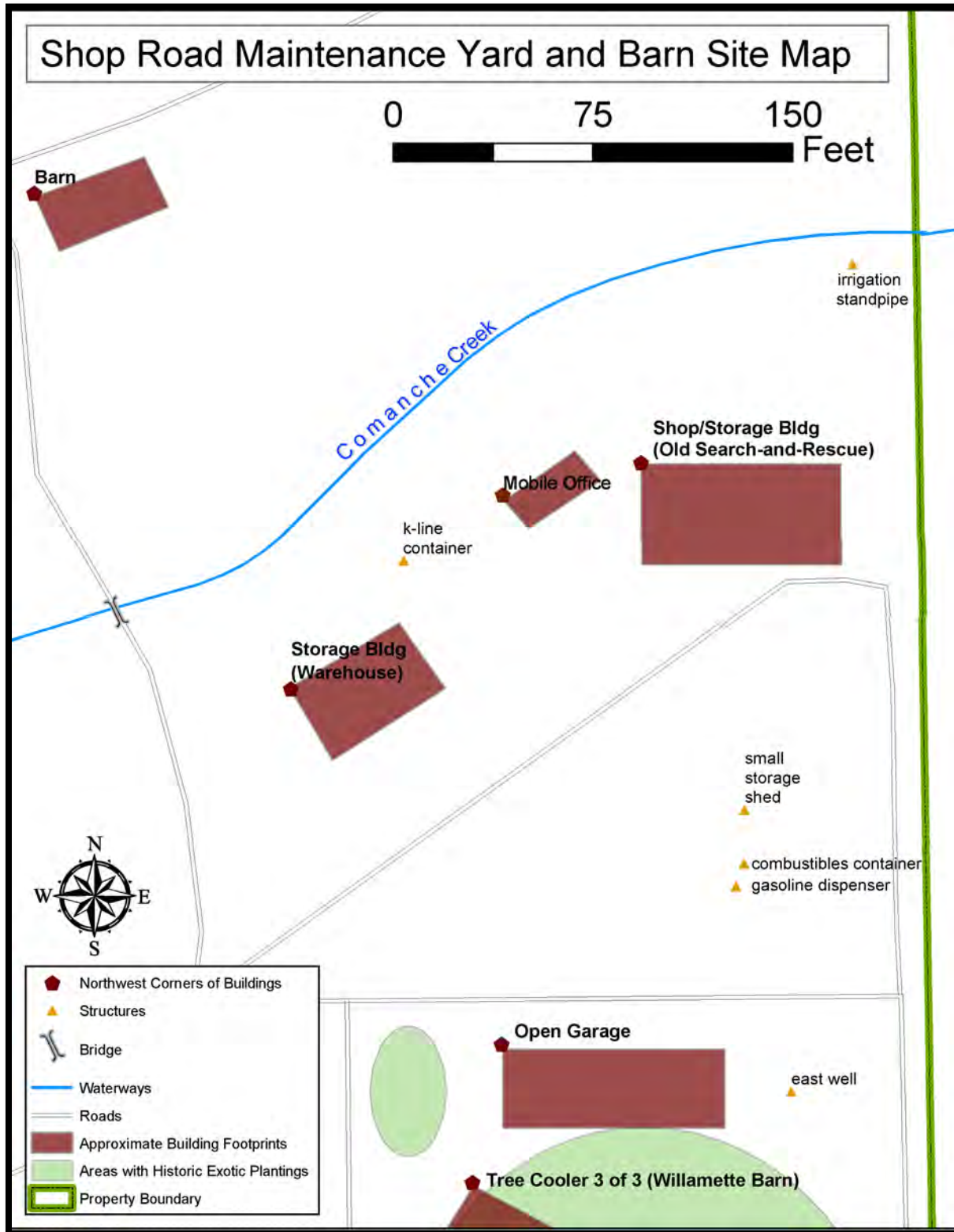


Figure 249: Site map for the buildings and structures of the Shop Road maintenance yard, and for the Barn

Shop/Storage Building (Old Search-and-Rescue); #12116

Constructed at some point between 1987 and 1992 under a special-use permit to the Butte County Sheriff Department, the Shop/Storage Building (Old Search-and-Rescue) is a modern industrial one-story building with a rectangular-shaped plan, a side-gabled roof with a very low pitch, and a concrete foundation. The building's main façade is oriented towards the south onto the open vehicle loop of Shop Road. The Shop/Storage Building (Old Search-and-Rescue) is located approximately 175 feet north of the Open Garage, 315 feet northeast of the headhouse, and 60 feet south of Comanche Creek.

Architectural Description

The Shop/Storage Building (Old Search-and-Rescue) measures approximately 40 feet by 82 feet, encompassing 3,280 square feet. The building has a side-gabled roof with a very low pitch. The roof is sheathed with "Butler"-brand aluminum sheeting. The eave extends beyond the roof-wall junction by only a couple of inches and no rafters are exposed. A number of exhausts, utilities, and electrical fixtures are located just below the roof-wall junction, but do not project through the roof. The roof contains an additional four roof vents. The building's foundation is concrete slab of approximately 6-inch thickness. The building's walls are clad in aluminum siding.

The Shop/Storage Building (Old Search-and-Rescue) has one pedestrian entrance and two vehicle bay doors on its primary southern elevation, and one pedestrian entrance and two vehicle bay doors on its northern elevation. Both pedestrian doors are solid metal with modern hardware within metal frames. The primary entrance on the southern elevation is equipped with a metal overhead canopy. All four vehicle bay doors are designed to roll upwards and are fitted within metal frames. The primary southern elevation also contains one boarded-up horizontally sliding window of two single panes with metal mullion and casing. There are no windows on either the eastern elevation or the northern elevation. The western elevation contains one awning window of three single horizontal panes with metal mullions and casing. One additional awning-style exhaust port occurs on the building's northern elevation at its northwest corner. The northern elevation also hosts metal canopies overtop a propane tank and a large air-conditioning unit.

Landscape Setting

The general setting of this building consists of 131 acres of source-identified genetically improved, mostly native and some nonnative trees for the reforestation program of the Pacific Southwest Region. Species dedicated to this program present on property include ponderosa pine, douglas-fir, rust-resistant sugar pine, Port Orford cedar, and Afghanistan pine.

More specifically, this building occurs at the northern portion of the Shop Road vehicle loop, which also includes the Storage Building (Warehouse), the Open Garage, the east well, two storage containers, a trailer, a mobile office, a storage structure for flammables and combustibles, a three-sided storage shed, and a gasoline dispenser. Old vehicles and discarded building materials are also present. The Shop Road vehicle loop is composed of gravel surfacing with some sparse grassy vegetation. To the northeast of the Shop/Storage Building (Old Search-and-Rescue), just south of Comanche Creek, is a concrete irrigation standpipe that was once part of the property's irrigation system. To the east of the Shop Road Loop is a chain-link fence topped with barbed wire that marks the property boundary. Though some elements of the historic irrigation system remain, in general the Shop Road loop has attained the industrial feel of a maintenance yard.

Modifications

Since its construction in 1987, the window on the primary southern elevation has been boarded up, but the building has undergone no structural modifications. As of 1993, a new search-and-rescue building was constructed on the property's northern boundary along Morrow Lane in order to reduce the quantity of emergency vehicles passing through what had become a recreational destination along the Comanche Creek Nature Trail. As of 1994, the old search-and-rescue building was converted into a 'shop.' Today it serves primarily as a storage building.

Integrity

Though the Shop/Storage Building (Old Search-and-Rescue) is a modern building that does not date to the property's period of significance, it does retain integrity of location, design, setting, and materials. Its feeling and association are related to recent decades of the property's history, and to the practice of the USDA Forest Service to engage partners and local communities in shared benefits that may not be directly related to the mission or purpose of the property itself.



Figure 250: Southern primary elevation of Shop/Storage Building (Old Search-and-Rescue), with primary pedestrian entrance and two roll-up vehicle bay doors. Photograph taken 6/25/2019.



Figure 251: Eastern elevation of Shop/Storage Building (Old Search-and-Rescue) with no windows, doors, or other architectural features. Photograph taken 6/25/2019.



Figure 252: Northern (riverside) elevation of Shop/Storage Building (Old Search-and-Rescue), with pedestrian entrance, two roll-up vehicle bay doors, and two canopy awnings overtopping utilities. Photograph taken 6/26/2019.



Figure 253: Western elevation of Shop/Storage Building (Old Search-and-Rescue) with one awning-style window of three single horizontal panes. Photograph taken 6/26/2019.

Gasoline Dispenser

This structure was installed on site at some point around 1987, at which point use of the maintenance yard was permitted to the Butte County Sheriff Department Search-and-Rescue operations. It is a utilitarian structure with a rectangular-shaped plan on a concrete-slab foundation. The structure's main façade, i.e. the one housing the gasoline pumps and hoses, is oriented to the southeast, facing the Open Garage. The gasoline dispenser measures 12' 4" by 6' 10," encompassing approximately 84 square feet. It is a concrete containment system, equipped with pumps, valves, hoses, and other necessary appurtenances.

Though the present-day gasoline dispenser is located roughly adjacent to the site of the concrete-and-wood 'gas house,' which had serviced the property from 1936 to ca. 1982, that association is no longer intact. Today's gasoline dispenser shares the same landscape setting as the Shop/Storage Building (Old Search-and-Rescue): that of the industrial feel of a maintenance yard. It is located in the vegetated island of the Shop Road vehicle loop, 40' north of the Open Garage and 115' south of the Shop/Storage Building (Old Search-and-Rescue). It retains integrity since its ca. 1987 installation.



Figure 254: Southeastern primary façade of gasoline dispenser with Shop/Storage Building (Old Search-and-Rescue) in the background. Photograph taken 6/25/2019.



Figure 255: Northeastern façade of gasoline dispenser with mobile office in the background. Photograph taken 6/25/2019.



Figure 256: Northwestern façade of gasoline dispenser with Open Garage in the background. Photograph taken 6/25/2019.



Figure 257: Southwestern façade of gasoline dispenser with flammables and combustibles storage container in the background. Photograph taken 6/25/2019.

Shop Road Small Storage Shed

Judging from the materials, condition, and location of the Shop Road small storage shed, it was likely installed on site around 1987, or soon thereafter, at which point use of the maintenance yard was permitted to the Butte County Sheriff Department Search-and-Rescue operations. The Shop Road small storage shed is a three-sided one-story wood-frame structure with a square-shaped plan. The structure's main open façade is oriented towards the northeast. It is located within the vegetated island of the Shop Road vehicle loop, approximately 15 feet north of the flammables and combustibles storage container and 100 feet south of the Shop/Storage Building (Old Search-and-Rescue). The landscape setting of the Shop Road small storage shed is the same as that of the Shop/Storage Building (Old Search-and-Rescue).

The Shop Road small storage shed measures 8' 2" by 8' 2," encompassing approximately 67 square feet. The shed has a gambrel roof form with a bottom flange on its northwestern elevation. The roof is sheathed with roof shingles on its upper pitch and corrugated sheet metal on its lower pitch. It is likely that the sheet metal is a later addition to the structure. There are no roof projections. The shed lacks a foundation, but is rather set directly atop the ground surface. The walls are composed of plywood with no exterior cladding. The only entrance to the shed is its open northeastern façade. The shed has no windows.



Figure 258: Northeastern primary open façade of the Shop Road small storage shed, with Open Garage at back left and Storage Building (Warehouse) at back right. Photograph taken 6/25/2019.



Figure 259: Southeastern façade of Shop Road small storage shed, with Shop/Storage Building (Old Search-and-Rescue) in the background. Photograph taken 6/25/2019.



Figure 260: Southwestern façade of Shop Road small storage shed, showing gambrel roof form. Photograph taken 6/25/2019.



Figure 261: Detail of roofing materials of Shop Road small storage shed, with moss-covered asbestos shingles on upper pitch and corrugated sheet metal on lower pitch. Photograph taken 6/25/2019.

Mobile Office

Installed in ca. 1994 as the “orchard office,” the mobile office is a utilitarian mobile-home-style, one-story building with a rectangular-shaped plan, a rounded roof, and a foundation of wooden pier blocks placed directly on the ground surface. The building’s main façade is oriented towards the south, facing onto the Shop Road maintenance yard. The mobile office is located 20 feet west of the Shop/Storage Building (Old Search-and-Rescue), 50 feet northeast of the Storage Building (Warehouse), 175 feet north of the Open Garage, and approximately 20 feet south of Comanche Creek. The landscape setting of the mobile office is the same as that of the Shop/Storage Building (Old Search-and-Rescue).

The mobile office measures approximately 32 feet by 10 feet, encompassing 320 square feet, not including its front porch addition. The unenclosed, unroofed front porch addition measures approximately 32 feet by 8 feet. The mobile office has a rounded sheet metal roof with a low pitch and no projections or other architectural features. The building was constructed atop steel beams that run its short axis. These beams rest upon wooden pier blocks that were placed directly on the ground surface. The mobile office’s walls are clad in aluminum siding. The mobile office has two entrances on its southern elevation. Both are solid metal doors with modern hardware within metal frames. Both also feature a single-paned eye-level window in a metal casing. The southern elevation also contains one double-paned casement window with metal mullion and metal casing. The northern (riverside) elevation contains two of these double-paned casement windows with metal mullions and metal casings. The front porch addition is composed of wooden boards set atop wooden piers and a foundation of concrete pier blocks. An affixed air-conditioning unit and other utilities are located beneath a roof overhang on the building’s eastern elevation. Since its installation ca. 1994, the front porch has been added onto the building, and the building has experienced mold growth, rusting, and general deterioration. The building no longer appears to be in use. Though it does not date to the property’s period of significance, it retains integrity of design and materials, though its design as a mobile unit detracts from any degree of integrity of location, setting, or feeling that would be afforded to a permanent building. Its association is related to recent decades of the property’s history.



Figure 262: Southern primary elevation of mobile office, with two entrances and one double-paned casement window. Photograph taken 6/25/2019.



Figure 263: Eastern elevation of mobile office, with roof overhang overtop affixed air-conditioning unit and other utilities. Two double-paned casement windows of northern elevation are visible on the right, and the Storage Building (Warehouse) is visible at back left. Photograph taken 6/25/2019.

Open Garage; #2328

Constructed in 2005, the Open Garage is a utilitarian one-story building with a rectangular-shaped plan, a flat corrugated-metal roof that slopes slightly towards its southern elevation, and a concrete slab foundation. The structure's main (open) façade is oriented towards the north, facing into the Shop Road maintenance yard. The Open Garage is located 175 feet south of the Shop/Storage Building (Old Search-and-Rescue), 15 feet north of the Tree Cooler 3 of 3 (Willamette Barn), and 70 feet northeast of the headhouse. The historic East Well is located directly east of the Open Garage. Though historic exotic plantings are located directly south and west of the structure, the Open Garage fronts on the Shop Road maintenance yard, with which it is associated, therefore the landscape setting of the Open Garage is the same as that of the Shop/Storage Building (Old Search-and-Rescue).

The Open Garage measures approximately 120 feet by 32 feet, encompassing approximately 3,840 square feet. The Open Garage has a flat roof of corrugated aluminum that slopes slightly towards its southern façade. The eave extends beyond the roof-wall junction by only a couple of inches and no rafters are exposed. The roof contains no roof projections. The structure's foundation is a concrete slab on which vehicles and equipment are parked. The structure's walls are composed of corrugated aluminum. The structure's northern elevation has no wall and is open to the elements. There are no doors or windows on the structure, besides the open northern elevation through which vehicles are accessed. This structure has undergone no modifications since its construction. Though it does not date to the property's period of significance, it retains integrity of location, design, setting, and materials. Though the Open Garage is situated in the same location as a 1930s-era garage and machinery shed, its feeling and association are related to recent decades of the property's history.



Figure 264: Open northern elevation of Open Garage. Photograph taken 6/25/2019.



Figure 265: Southern elevation of Open Garage. Though ARS-era exotic plantings are located just south of the structure, they bear no association to each other besides location. Photograph taken 6/25/2019.

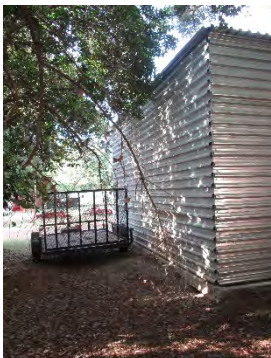


Figure 266: Western elevation of Open Garage. Photograph taken 6/26/2019.



Figure 267: Eastern elevation of structure. Note historic east well at left. Photograph taken 6/25/2019.

Storage Building (Warehouse); #2635

Though plans for this building date back to as early as 1982, the Storage Building (Warehouse) was not constructed until 1997. The Storage Building (Warehouse) is a modern industrial one-story building with a rectangular-shaped plan, a front-gabled roof with a very low pitch, and a concrete foundation. The building's main facade is oriented towards the southwest. The Storage Building (Warehouse) is located on the Shop Road vehicle loop, 100 feet southwest of the Shop/Storage Building (Old Search-and-Rescue), 175 feet north of the headhouse, and 30 feet south of Comanche Creek. Located directly east of the Storage Building (Warehouse) is a 'K-Line' container and two vehicle trailers. The landscape setting of the Storage Building (Warehouse) is the same as that of the Shop/Storage Building (Old Search-and-Rescue).

The Storage Building (Warehouse) measures 40.5 feet by 30 feet, encompassing 1,215 square feet. The building has a front-gabled roof with a very low pitch. The roof is sheathed with "VP"-brand aluminum sheeting. The eave extends beyond the roof-wall junction by only a couple of inches and no rafters are exposed. The building contains two roof vents. The building's foundation is concrete slab. The building's walls are clad in aluminum siding. The Storage Building (Warehouse) has one pedestrian entrance on its primary southwestern façade, one vehicle bay door on its primary southwestern façade, and one vehicle bay door on its southeastern façade. The pedestrian entrance on the building's southwestern façade is a solid metal door with modern hardware within a metal frame. It contains the emblem of hazardous materials storage. The vehicle bay door on the southwestern façade is a metal roll-up style set within a metal frame. It fronts onto an asphalt driveway, which connects with the access road between the headhouse and the Barn. Another metal roll-up vehicle bay door of the same style is located on the building's southeastern façade, facing onto the Shop Road maintenance yard. This building contains no windows. Three five-holed ventilation ports are located near the ground surface on the building's northwestern (riverside) elevation.

This building has not undergone any modifications since its construction. Though it does not date to the property's period of significance, it retains integrity of location, design, setting, and materials. Its feeling and association are related to recent decades of the property's history.



Figure 268: Southwestern primary elevation of Storage Building (Warehouse), with pedestrian entrance and vehicle bay door fronting on asphalt driveway. Photograph taken 6/25/2019.



Figure 269: Southeastern elevation of warehouse/storage building with vehicle bay door fronting on the Shop Road maintenance yard. Adjacent 'K-Line' container is located directly northeast of the building. Photograph taken 6/25/2019.

Flammables and Combustibles Storage Container

Installed on site sometime between 2003 and 2006, the flammables and combustibles storage container is a standardized utilitarian rectangular-shaped storage container. Its primary façade is oriented towards the southwest. The flammables and combustibles storage container is located in the vegetated island of the Shop Road vehicle loop, approximately 35 feet north of the Open Garage, 115 feet south of the Shop/Storage Building (Old Search-and-Rescue), and five feet east of the gasoline dispenser. The landscape setting of the Storage Building (Warehouse) is the same as that of the Shop/Storage Building (Old Search-and-Rescue).

The flammables and combustibles storage container measures 24' by 9' 6," encompassing approximately 228 square feet. The foundation of the flammables and combustibles storage container consists of steel I-beams set atop the ground surface. Its roof is side-gabled with a low pitch, is sheathed with sheet metal and contains no roof projections. The structure's walls are clad in sheet metal. The flammables and combustibles storage container has three entrances and no windows. The primary entrance is located on the southwestern façade, facing the gasoline dispenser, and is accessed by a set of two wooden steps. The other two entrances are located on the northeastern façade. Two of the three entrances are labelled with the hazardous materials symbology. All three entrances consist of metal double doors with modern hardware, set within metal frames. The primary southwestern façade contains one awning-style box vent. The southeastern and northwestern facades each contain two flat grate vents. The structure has no windows.



Figure 270: Southeastern primary façade of gasoline dispenser with Shop/Storage Building (Old Search-and-Rescue) in the background. Photograph taken 6/25/2019.



Figure 271: Northeastern façade of gasoline dispenser with mobile office in the background. Photograph taken 6/25/2019.



Figure 272: Southeastern façade of flammables and combustibles storage container, with two flat grate vents. Photograph taken 6/25/2019.



Figure 273: Northwestern façade of flammables and combustibles storage container, with cement mixer stored aside it. Photograph taken 6/25/2019.

Shop Road K-Line Container

Installed on site between 2017 and 2018, the Shop Road K-line container is a standardized intermodal metal shipping container. It is oriented towards the south. It is located in the Shop Road maintenance yard, directly to the east of the Storage Building (Warehouse) and approximately 80 feet southwest of the Shop/Storage Building (Old Search-and-Rescue). The landscape setting of the Shop Road K-line container is the same as that of the Shop/Storage Building (Old Search-and-Rescue). The container measures 8 feet by 40 feet, encompassing approximately 320 square feet. It has no foundation, but is set directly atop the ground surface. Its roof is flat, and its roof and walls are entirely composed of metal. It is equipped with an electric floodlight fixture. The container has one double-door entrance, encompassing the entirety of its southern façade. This K-line container replaces a previous mobile office that was removed from the site between September 2015 and April 2016.



Figure 274: Southern primary façade of Shop Road K-line container, with Storage Building (Warehouse) to left and staged vehicle trailer to right. Photograph taken 6/25/2019.



Figure 275: Eastern façade of Shop Road K-line container with utility hook-up for electric floodlight fixture. Photograph taken 6/25/2019.



Figure 276: Northern façade of Shop Road K-line container with Storage Building (Warehouse) in background. Photograph taken 6/25/2019.



Figure 277: Previous mobile office in location of present-day K-line container. This mobile office was removed from the site between September 2015 and April 2016. Photograph taken 9/14/2015. Photograph courtesy of Joel Little.

Non-historic Buildings and Structures of the Search-and-Rescue Headquarters Building Cluster

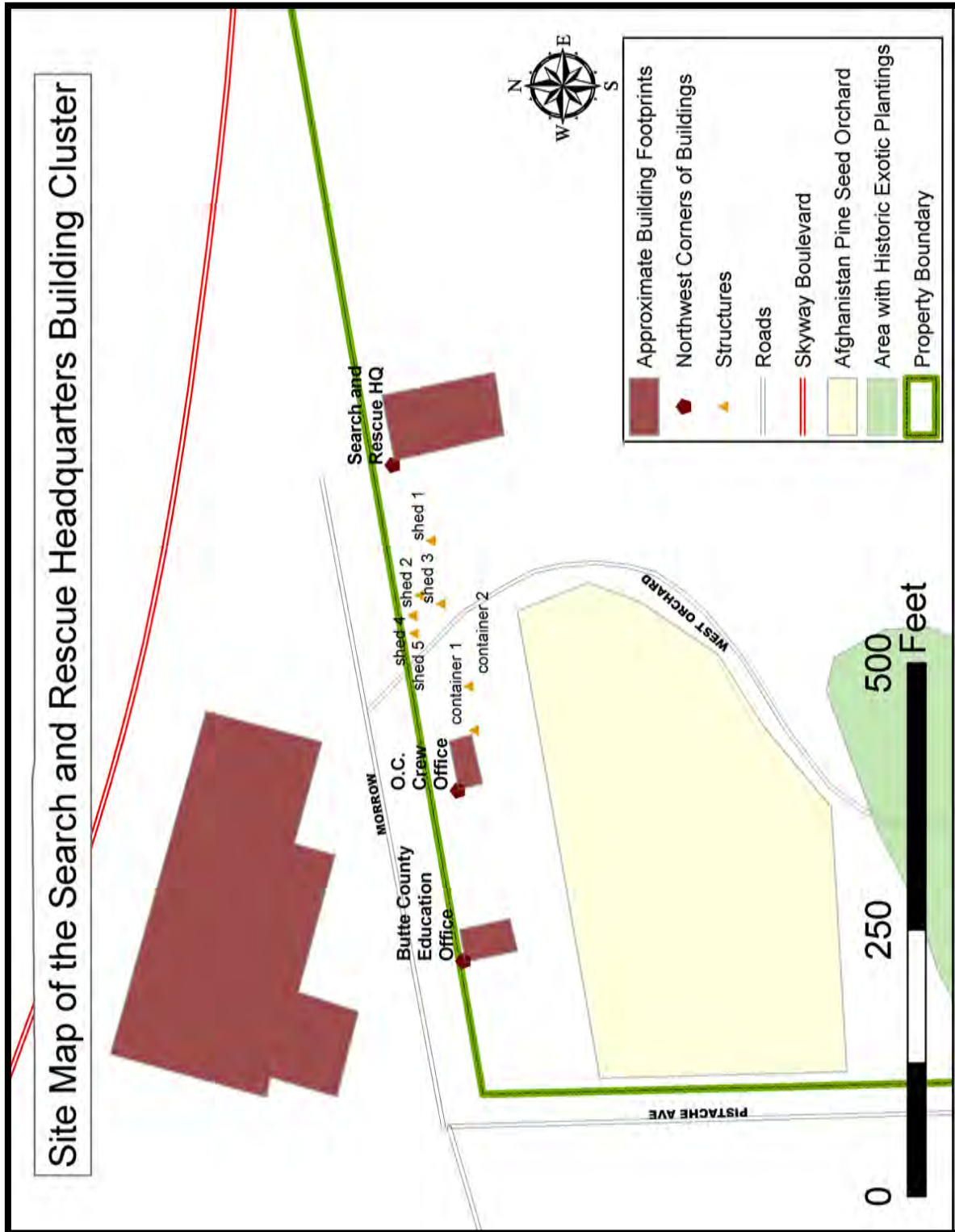


Figure 278: Site Map of the Butte County Sheriff Search and Rescue Headquarters Building Cluster

Butte County Sheriff Search and Rescue Headquarters

The Butte County Sheriff Department search-and-rescue operations was relocated from its building in the Shop Road maintenance yard due to the incongruity of emergency vehicles speeding past the nature trail area, frequented by recreationists and dog-walkers, and past the administrative site entrance, adjacent to a residential area. The new search-and-rescue headquarters was constructed ca. 1993, directly on Morrow Lane along the northern boundary of the property so that these emergency vehicles could bypass pedestrian and residential traffic. The Butte County Sheriff Search and Rescue Headquarters is a modern industrial one-story building with a rectangular-shaped plan. Its southern two-thirds compose a warehouse with a vaulted ceiling higher than the northern one-third, which serves as an office and classroom. The building's main façade is oriented towards the east, though the northern facade, facing Morrow Lane, is also prominent from streetview with a large sign reading "Lt. Larry Estes Training Center; Butte County Sheriff Search & Rescue Headquarters; 3965 Morrow Lane; 39°42'46" 121°47'...". The Butte County Sheriff Search and Rescue Headquarters is located at 3965 Morrow Lane, 2,350 feet northwest of the property's Office Building (Laboratory), 275 east of the O.C. Crew Office Building, and 450 east of the Butte County Education Extension Office.

Architectural Description

The Butte County Sheriff Search and Rescue Headquarters measures approximately 100' by 51', encompassing approximately 5,100 square feet. The building is segmented into two parts: a front office/classroom and a back warehouse. Both segments contain "Butler"-brand front-gabled rooves, but the office/classroom segment's roof has a medium pitch, while the warehouse segment roof has a low pitch. Both segments are sheathed with corrugated sheet metal. The eaves of the roof segments project from the roof-wall junction by about one foot, exhibit metal sheeting under-eave, and do not exhibit exposed rafters or other features. A number of communications antennae and satellite dishes are attached to the roof. The roof also contains electric fixtures to support the antennae and three exhaust vents over the office/classroom segment of the building. The building's foundation is concrete, and its walls are clad in sheet metal siding.

The Butte County Sheriff Search and Rescue Headquarters contains two pedestrian entrances and two vehicle bay doors on its eastern (primary) elevation. Both doors are solid metal with modern hardware, set within metal frames with slight awnings over top. One of these doors accesses the warehouse segment of the building and is labelled "equipment bay." The other door access the office/classroom segment of the building and is labelled "Office & Classroom." Both vehicle bay doors are roll-up style within metal frames and access the warehouse segment of the building. The office/classroom segment of the eastern elevation also contains two metal-framed casement windows, composed of two single panes apiece separated by metal mullions. These windows are located about a foot below the roof-wall junction. The northern façade also features two of these casement windows, as well as three flat grate vents just below the peak of the façade's gable. The office/classroom segment of the western elevation also contains one of these casement windows. The southern elevation contains no windows or doors, but is equipped with an electrical light fixture located just below the peak of this façade's gable. Other utilities are affixed to the building's exterior, especially on its northern façade, including an air-conditioning unit on a concrete pad just north of the building. A large propane tank sits behind the building's southern façade.

Landscape Setting

The search-and-rescue headquarters building cluster is located at the far western stretch of Morrow Lane where it dead-ends before Skyway Road. This area from streetview is characterized by large industrial and commercial buildings. Just south of the search-and-rescue headquarters building cluster are ponderosa pine orchards of the present-day Chico Seed Orchard administrative site within the general setting of 131 acres of source-identified genetically improved, mostly native and some nonnative trees for the reforestation program of the Pacific Southwest Region.

The direct vicinity of the Butte County Sheriff Search and Rescue Headquarters has the feel of an industrial park, rather than a seed orchard. Its primary façade is paved and unadorned with a view out to Skyway Road. Its northern façade is planted with flowering shrubs to obscure the utilities located there. Its western façade is also planted with flowering shrubs, but the presence of vehicle trailers and storage sheds haphazardly arranged dominates the area to a greater extent. The building is separated from Morrow Lane by a chain-link fence.

Modifications and Integrity

The Butte County Sheriff Search and Rescue Headquarters does not appear to have been modified since its construction ca. 1993. Though it does not date to the property's period of significance, it retains integrity of location, design, materials, feeling, and association with a highly developed commercial area with ease of access to city streets. Its setting was modified somewhat in 2005 with the construction of a large commercial facility directly across Morrow Lane.



Figure 279: Eastern primary façade of Butte County Sheriff Search and Rescue Headquarters, with primary pedestrian entrance on right. Photograph taken 6/26/2019.



Figure 280: Northern façade of Butte County Sheriff Search and Rescue Headquarters, with flowering shrubs obscuring utilities. Photograph taken 6/26/2019.



Figure 281: Western façade of Butte County Sheriff Search and Rescue Headquarters. Photograph taken 6/26/2019.



Figure 282: Southern façade of Butte County Sheriff Search and Rescue Headquarters, with Skyway Road at back right. Photograph taken 6/26/2019.

O.C. Crew Office Building; #2015

Installed ca. 1994, at which point it was referred to as the “fire staging office,” the O.C. Crew Office Building is a one-story, single-wide prefabricated building with a rectangular-shaped plan and a shed-style roof. The building’s main façade is oriented towards the south. It is located approximately 275 feet west of the Butte County Sheriff Search and Rescue Headquarters, approximately 135 feet east of the Butte County Education Extension Office, and 45 feet south of Morrow Lane. The O.C. Crew Office Building has the same landscape setting as Search and Rescue Headquarters, though it is also located close to an Afghanistan pine orchard on its western and southern sides.

Architectural Description

The O.C. Crew Office Building measures 30’ 3” by 12’ 3”, encompassing approximately 370 square feet, not including an open front deck and ramp. This building has a shed-style roof, sloped down toward Morrow Lane. The roof is sheathed in corrugated metal atop plywood sheathing. It features a plywood fascia and an unboxed eave with exposed rafters. Two vent pipes project through the roof along its northern margin. The building’s foundation is obscured by wooden drop siding that extends down to the ground surface. This building is a modified modular office, pre-fabricated, installed on site, and seemingly set directly on grade. The building’s walls are clad in wooden drop-siding in three distinct segments: one segment that extends not more than one foot above ground surface, one segment that encompasses the main body of the building, and one segment that encompasses the slope of the roof.

The O.C. Crew Office Building has two entrances, one on the primary southern elevation accessed by the open front deck and ramp, and one on the eastern elevation which is situated at least one foot above ground surface but lacks access steps. The door of the main entrance on the southern elevation is composed of solid metal with modern hardware and three sets of double vertical panels, set within a basic wooden frame. The door on the eastern elevation is smaller and wooden, but still with three sets of double vertical panels and set within a basic wooden frame. The southern elevation also contains two windows that flank either side of the main entrance. They are both casement windows of two single panes that slide horizontally. They both contain metal mullions set within thick wooden frames with no sills. The northern elevation contains two of these casement windows, as well as a third window that is smaller but in the same style as the others. The western elevation contains one casement window of the same style as the southern elevation. Both the eastern and western elevations contain flat grated vents set within thick wooden frames, built into the upper segment of wall cladding, located just below the roof-wall junction. The eastern elevation also contains a light fixture at its roof-wall junction. The northern elevation contains multiple utility connections, including an air-conditioning unit set atop a concrete pad. The western elevation contains a wall-mounted air-conditioning unit, as well as two metal patches where presumably utilities previously entered or exited the building. The open front deck and ramp of the O.C. Crew Office Building is composed of wooden boards and railings. It measures 29’ 4” by 10’ 5”, encompassing approximately 305 square feet. The wooden posts of the deck are set atop a foundation of concrete piers.

Modifications and Integrity

Minor modifications of this building include the metal patches on the western elevation where presumably utilities previously entered or exited the building, as well as the lack of steps for the door that is raised above ground level on the eastern elevation. The front deck and ramp itself are likely to be

a later additions to the original floor plan. As of 2015, the front deck was equipped with an overhead wooden framework that supported a shadecloth, but both framework and shadecloth have been since removed. Though this building does not date to the property's period of significance, it retains integrity of design, materials, and association with a highly developed commercial area with ease of access to city streets. Its design as a modular unit detracts from any degree of integrity of location, setting, or feeling that would be afforded to a permanent building. Its setting was modified somewhat in 2005 with the construction of a large commercial facility directly across Morrow Lane.



Figure 283: Primary southern elevation of O.C. Crew Office Building, with open front deck and ramp. Photograph taken 6/26/2019.

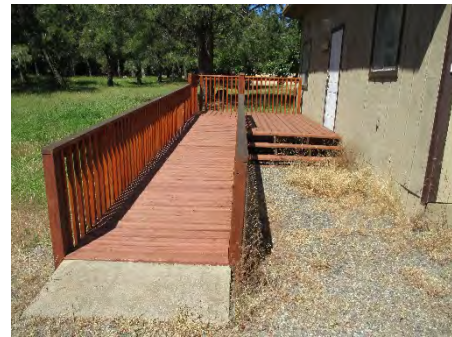


Figure 284: Accessible ramp of O.C. Crew Office Building. Photograph taken 6/26/2019.



Figure 285: Eastern elevation with door raised above ground level. Photograph taken 6/26/2019.



Figure 286: Northern (roadside) elevation with utility connections. Photograph taken 6/26/2019.



Figure 287: Western elevation with metal patches. Photograph taken 6/26/2019.



Figure 288: Eastern elevation as seen in 2015, when wooden framework and shadecloth of front deck were still in use. They have since been removed. Photograph taken 8/20/2015. Photograph courtesy of Joel Little.

Butte County Education Extension Office

Installed at some point between 1998 and 2002, the Butte County Education Extension Office is a one-story, double-wide prefabricated building with a rectangular-shaped plan and a shed-style roof. The building's main façade is oriented towards the north, facing Morrow Lane. The Butte County Education Extension Office is located 135 feet west of the O.C. Crew Office Building, directly south of Morrow Lane, and 150 feet east of the intersection of Morrow Lane and Cramer Lane. The Butte County Education Extension Office has the same landscape setting as Butte County Sheriff Search and Rescue Headquarters, though it is also located close to an Afghanistan pine orchard on its western and southern sides. It is separated from Morrow Lane by a chain-link fence, below which are remnants of a rock garden that is no longer maintained. A large graded area with a gravel base is located east of the building. It is uncertain whether this area was graded to accommodate buried utilities of the existing building, or perhaps in planning for installation of another adjacent prefabricated modular building.

Architectural Description

The Butte County Education Extension Office measures 40' 4" by 24', encompassing approximately 968 square feet. This building has a shed-style roof, sloped away from Morrow Lane, with downspout gutters on its southern elevation. The roof is sheathed in corrugated metal. The roof overhangs from the building only on its northern and southern elevations, and features an eave, boxed on the underside with plywood, with no exposed roof elements. This building is a modified double-wide modular office, pre-fabricated, installed on site, and set on wooden boards. The building's walls are clad in wooden drop-siding in two distinct segments: one segment that encompasses the main body of the building, and one segment that encompasses the slope of the roof. A third wall segment that extends not more than one foot above ground surface is composed of horizontal baseboards.

The Butte County Education Extension Office has only one entrance, located on its northern elevation along Morrow Lane. The building door is located near its northwestern corner, and is accessed by a paved walkway and a metal ramp. The door itself is solid metal with modern hardware, set within a wooden frame. The primary northern elevation also contains one casement window of two single panes that slide horizontally. The window contains metal mullions set within a wooden frame with no sill. The northern elevation also contains a light fixture, a natural gas connection, and other electrical fixtures. The southern elevation contains one casement window of three panes that slide horizontally, with metal mullions set within a wooden frame. The southern elevation also contains a large air-conditioning unit affixed to its wall. The eastern and western elevations contain no doors or windows, though the eastern elevation does contain utility connections. Flat grated vents are located on the building's exterior baseboards, four apiece on the eastern and western elevations, two on the southern elevation, and presumably two on the northern elevation, though they are obscured by the accessible ramp.

Modifications and Integrity

The rock garden that once fronted this building has been modified with the installation of a chain-link fence. Otherwise, this building retains integrity of design, materials, and association with a highly developed commercial area with ease of access to city streets. Its design as a modular unit detracts from any degree of integrity of location, setting, or feeling that would be afforded to a permanent building. Its setting was modified somewhat in 2005 with the construction of a large commercial facility directly across Morrow Lane. This building does not date to the property's period of significance.



Figure 289: Primary northern (roadside) elevation of Butte County Education Extension Building, with accessible ramp. Photograph taken 6/26/2019.



Figure 290: Eastern elevation with adjacent graded area with gravel base. Photograph taken 6/26/2019.



Figure 291: Southern elevation with one casement window and affixed air-conditioning unit. Photograph taken 6/26/2019.



Figure 292: Western elevation with no windows or doors. Photograph taken 6/26/2019.



Figure 293: Horizontal baseboards and foundation of wooden boards. Photograph taken 6/26/2019.



Figure 294: Abandoned rock garden located in front of building, bisected by installation of chain-link fence. Photograph taken 6/26/2019.

Fire Cache Containers (2)

Installed ca. 1998-2002, the two fire cache containers have been used in place as supplemental storage for the O.C. Crew Office Building since their installation on site. They are intermodal metal shipping containers, but are equipped with one pedestrian door and one vehicle bay door apiece, in addition to their standard container double-doors. Their main façade is oriented toward the north, facing Morrow Lane. They are located 20 feet southeast from the O.C. Fire Cache Building, approximately 225 feet west of the Butte County Sheriff Search and Rescue Headquarters, and 75 feet south of Morrow Lane. They share the same landscape setting as the O.C. Crew Office Building. They are set directly north of a retaining wall composed of two courses of railroad ties that raises the containers above the level of what remains of Stone Run, the small drainage that runs along the northern boundary of the property.

They measure 40' by 9' each, encompassing 360 square feet each. They are metal on all sides, and are set directly atop the ground surface with no foundation. Their pedestrian doors are metal with modern hardware, set within metal frames. Their vehicle bay doors are metal roll-ups set within metal frames. They also contain standard container double-doors, encompassing the entirety of their (outer) eastern and western façades, respectively. They contain no windows. They have undergone no modifications, and retain integrity, though they do not date to the property's period of significance.



Figure 295: Northern (roadside) elevation of two fire cache containers, located within the Search and Rescue Headquarters building cluster. Photograph taken 6/26/2019.



Figure 296: Northern and western elevations. Photograph taken 6/26/2019.



Figure 297: Southern and eastern elevations, with retaining wall over remains of Stone Run. Photograph taken 6/26/2019.



Figure 298: Eastern elevation with standard container double-door. Photograph taken 6/26/2019.

New Search-and-Rescue Storage Sheds (5)

Installed ca. 2013-2015, these five enclosed sheds are located approximately 115 feet west of the Butte County Sheriff Search and Rescue Headquarters, approximately 150 feet east of the O.C. Crew Office Building, and approximately 40 feet south of Morrow Lane. They are oriented in multiple directions and arranged in a manner that appears impermanent and haphazard. They have the same landscape setting as the Butte County Sheriff Search and Rescue Headquarters. There is a large vehicle trailer separating one shed from the other four.

They are utilitarian one-story storage sheds, with front-gabled rooves, set atop foundations of cinder blocks. Their rooves are sheathed with shingles and their walls are of unclad board-and-batten plywood. They have one wooden double-door apiece set within wooden frames. Atop these double doors are two ribbon windows of five panes apiece with metal mullions within wooden frames. They retain integrity, though they do not date to the property's period of significance.



Figure 299: Four of five new search-and-rescue storage sheds, with large vehicle trailer in background. Photograph taken 6/26/2019.



Figure 300: Three of five new search-and-rescue storage sheds with Search and Rescue Headquarters in background. Photograph taken 6/26/2019.



Figure 301: Primary elevation of storage shed, with double-door and ribbon windows. Photograph taken 6/26/2019.



Figure 302: Side elevation of storage sheds with board-and-batten plywood. Photograph taken 6/26/2019.

Other Non-historic Buildings and Structures

North Well

The north well was drilled in 1979, with its industrial-grade pump and electrical fixtures installed in 1980. Irrigation lines that were fed by this well continued to be installed until at least 1983. The north well is composed of large steel pipes and joints, encased within a concrete pad. An adjacent industrial-grade pump is set upon a concrete platform. An electric control box and a storage cabinet are also set atop two separate concrete pads. A wooden light pole rises above the structure. The north well is located just north of Comanche Road, approximately 900 feet west of the Barn and 1,200 feet east of the old residence/site host area. It is at the south end of a rust-resistant sugar pine seed orchard. Its general setting consists of 209 acres of federal land, 131 acres of which host source-identified genetically improved trees for the reforestation program of the Pacific Southwest Region. Species dedicated to this program present on property include ponderosa pine, Douglas-fir, rust-resistant sugar pine, Port Orford cedar, and Afghanistan pine. The storage cabinet and generator may be later additions to the site, and are likely contemporaneous with the storage cabinet and generator at the headhouse building complex, since they are identical. Otherwise, the north well retains integrity, though it does not date to the property's period of significance.



Figure 303: The north well, with storage cabinet and electric control box in the background. Photograph taken 6/26/2019.



Figure 304: "1979" embossed on one of the well's joints. Photograph taken 6/26/2019.



Figure 305: View looking north of the north well, storage cabinet, and light pole, with rust-resistant sugar pine seed orchard in background. Photograph taken 6/26/2019.



Figure 306: Adjacent electric control box on a concrete pad. Photograph taken 6/26/2019.

South Well

The south well was drilled in 1979 and plans for installation of its pump were drafted in 1980, though actual installation of the pump may not have occurred until 1984, when electrical power was connected to it via underground lines. Different joints on the structure itself are embossed with “1985,” “1986,” and “1988,” at which point the system presumably became operational. The south well is composed of large steel pipes and joints, encased within a concrete pad. An adjacent industrial-grade pump is set upon a raised concrete platform. An electric control box, a storage cabinet, and a metal light pole are also located adjacent. The electric control box is set upon a concrete pad. The south well is located at the end of the improved section of South Well Road, a spur of South Orchard Road. It is located approximately 700 feet southwest from the Office Building (Laboratory), 715 feet south of Comanche Creek, and 460 feet north of the southern boundary of the property. Its general setting consists of source-identified genetically improved trees for the reforestation program of the Pacific Southwest Region to its north and west, and remnant historic exotic plantings, including pistachio trees and grape vines, to its south and east. The south well retains integrity, though it does not date to the property’s period of significance.



Figure 307: The south well, with storage cabinet and electric control box in the background. Photograph taken 6/26/2019.



Figure 308: Electric control box and storage cabinet on left, south well on right. Photograph taken 6/26/2019.



Figure 309: Steel joint of the south well, embossed with “EM400-M-I; 1985-9; C.M.BAILEY; 4.” Photograph taken 6/26/2019.



Figure 310: Steel joint of the south well, embossed with “4; NO 52; 200 W; 1986.” Photograph taken 6/26/2019.



Figure 311: Steel joint of the south well, embossed with “10; NO 52; 200 W; 1988.” Photograph taken 6/26/2019.

Stone Monument

Installed in 1981, the stone monument is located on the south side of Comanche Road under a large shade tree, approximately 95' southeast of the North Well. It is composed of concrete, with a veneer of embedded river cobbles on its sides. A metal bar, which presumably once held a plaque, is embedded into the concrete on its top surface. It is likely that this stone monument was installed to commemorate the discovery of four pre-contact burials on site in 1976. These burials were subsequently nominated to the National Register of Historic Places in 1981.

The stone monument has lost its commemorative plaque, but has otherwise not been modified or altered. This structure retains integrity, though it does not date to the property's period of significance.



Figure 312: View of the stone monument from the north. Photograph taken 6/26/2019.



Figure 313: View of the stone monument from the south. Photograph taken 6/26/2019.



Figure 314: Date '1981' inscribed into the concrete on the top surface of the stone monument. Photograph taken 6/26/2019.



Figure 315: Various names inscribed into the concrete on the top surface of the stone monument. Note metal bar that presumably once held a plaque. Photograph taken 6/26/2019.

Old Residence/Site Host Area Storage Shed

The old residence itself was removed between 1975 and 1983, at some point after which this shed was installed in order to supplement storage capacity of the site host area. The site host area contained two mobile homes, or ‘barracks,’ as of 1998 until their removal between October of 2017 and September of 2018. The area now hosts a private recreational vehicle trailer. While not identical to the small storage shed located in the Shop Road maintenance yard, the old residence/site host area storage shed shares similarities with the other small storage shed, such as a gambrel roof with a bottom flange and plywood walls. This storage shed was likely installed contemporaneously with the Shop Road small storage shed ca. 1987.

The old residence/site host area storage shed is a three-sided one-story wood-frame structure with a square-shaped plan. Its main façade is oriented towards the west. It is located 200 feet northeast from the main entrance to the property and 215 feet north of Comanche Creek. It measures 8’ by 8’, encompassing 64 square feet. The shed has a gambrel roof form with a bottom flange on both sides, and it is sheathed with roof shingles. There are no roof projections. The shed lacks a foundation, but is rather set directly atop the ground surface. The walls are composed of plywood with no exterior cladding, and have been modified to accommodate its use at some point as a doghouse. The only entrance to the shed is its open western façade. The shed has no windows.

The landscape setting of the old residence/site host area has been modified multiple times since 1907 (see Old Residence/Site Host Area Well). There remain in this area a number of historic exotic plantings, though this storage shed does not date to the same period as those plantings. Even since 1987, this area has been modified by the removal of two mobile homes and other appurtenances, such as camp grills and picnic tables, that lent this area a certain feeling. This structure does not retain integrity of design, setting, feeling, or association.



Figure 316: Primary open western façade of storage shed, with recreational vehicle trailer at back left. Photograph taken 6/26/2019.



Figure 317: Southern façade of storage shed, showing gambrel roof with bottom flange. Note modifications presumably for use as a doghouse. Photograph taken 6/26/2019.

Vehicle Bridges

There are two vehicle bridges located at the present-day site of the Chico Plant Introduction Garden. One is south of the old residence/site host area, southeast of the main entrance to the administrative site. The second is north of the headhouse and the Shop Road maintenance yard and accesses the Barn. Though the present-day bridges date to ca. 1989, there has been a vehicle bridge south of the old residence/Site Host area since at least 1918. There has been a vehicle bridge at the second location since at least 1961. The present-day vehicle bridges retain integrity of their 1989 construction, though they do not date to the property's period of significance. The bridges are composed of corrugated metal culverts, encased in concrete with small river cobbles embedded in the mortar. They are overlain with asphalt.



Figure 318: Eastern vehicle bridge looking north toward Barn. Photograph taken 2/9/2009. Photograph courtesy of Lisa Crane.



Figure 319: Eastern vehicle bridge looking south toward headhouse. Photograph taken 2/9/2009. Photograph courtesy of Lisa Crane.

Footbridge

Constructed at some point before 1994, the footbridge over Comanche Creek connects paved walking trails on both sides of the waterway. It replaces an older footbridge that was installed sometime before 1961. The footbridge is composed of wooden boards and handrails, and is approached by asphalt. It is located approximately 20 feet northwest of the Office Annex Building, and shares the same landscape setting as the Office Annex Building, though the footbridge does not date to the property's period of significance.

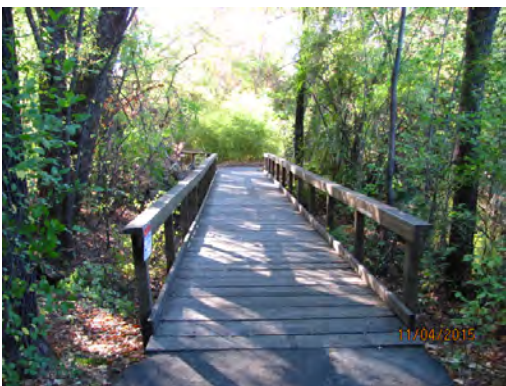


Figure 320: Present-day footbridge over Comanche Creek. Photograph taken 11/4/2015. Photograph courtesy of Lisa Crane



Figure 321: Remains of a previous footbridge, shown on a map from 1961. Photograph taken 6/24/2019.

Day-use Area Toilet; #12115

Constructed in 1992, the Day-use Area Toilet is a rustic-style, one-story, wood-frame building with an octagonal plan and four corner posts. Its rustic style, materials, and the user-group it serves are very similar to those used on the informational kiosk, with which it may be contemporaneous. The building's main façade is oriented towards the north. The Day-use Area Toilet is located north of Center Lane and south of Comanche Creek at the western end of the paved nature trail walking loop, approximately 460 feet southeast of the old residence/site host area. Its immediate landscape setting is that of the paved nature trail adjacent to Comanche Creek. South of the Day-use Area Toilet across Center Lane is a ponderosa pine seed orchard.

The Day-use Area Toilet measures 6' 6" by 6' 4" (post-to-post), encompassing approximately 41 square feet. It has a front-gabled roof with a medium pitch, sheathed in wooden shingles. The roof features a boxed eave and a wooden fascia. Directly below the end-gables are also featured a geometric wooden motif. A vent pipe partially projects through the roof at the peak of its back gable. The restroom's foundation is concrete slab. The restroom's walls are composed of two distinct segments: an upper segment of board-and-batten with vertical plywood boards, and a lower segment of horizontal wooden drop-siding. The restroom has one entrance, a solid metal door on its primary northern façade, set within a wooden frame. The restroom has two single-paned frosted windows, set within wooden frames, one on its eastern façade and one on its western façade. It has one screened vent on the lower wall segment of its eastern façade. It is also equipped with a large ventilator on its southern façade. This building has not been modified and retains integrity, though it does not date to the property's period of significance.



Figure 322: Primary northern façade of Day-use Area Toilet, with geometric wooden motif beneath end-gable. Photograph taken 6/25/2019.



Figure 323: Southern façade with large ventilator. Photograph taken 6/25/2019.



Figure 324: Western façade. Photograph taken 6/25/2019.



Figure 325: Eastern façade. Photograph taken 6/26/2019.

IV. Evaluation Methodology

Criteria for Evaluation

Properties over 45 years of age in the State of California are evaluated for NRHP eligibility using criteria defined in 36 CFR 63. The National Register Criteria for Evaluation are:

- A. Associated with events that have made a significant contribution to the broad patterns of our history; and/or
- B. Associated with the lives of persons significant in our past; and/or
- C. Embody the distinctive characteristics of a type, period, or method of construction, or represents the work of a master, or possesses high artistic values; or that represent a significant and distinguishable entity whose components may lack individual distinction; and/or
- D. Yielded, or may be likely to yield, information important in prehistory or history.

In addition to meeting one or more of the above criteria, the property must possess a preponderance of integrity. Integrity is the ability of a property to convey its historic context during its period of significance. The seven aspects of integrity are:

1. **Location:** the place where the historic property was constructed or the place where the historic event occurred
2. **Design:** the combination of elements that create the form, plan, space, structure, and style of a property
3. **Setting:** the physical environment of historic property
4. **Materials:** the physical elements that were combined or deposited during a particular period of time and in a particular pattern or configuration to form a historic property
5. **Workmanship:** the physical evidence of the crafts of a particular culture or people during any given period in history or prehistory
6. **Feeling:** a property's expression of the aesthetic or historic sense of a particular period of time
7. **Association:** the direct link between an important historic event or person and a historic property.

Guidelines for Evaluating Integrity

Varying degrees of integrity should be taken into consideration when evaluating resources under the four primary NRHP criteria.

- Criterion A** If eligible for its historic associations under Criterion A, then the resource should retain aspects of its overall integrity, although design and workmanship may not weigh as heavily as those aspects related directly to its historic associations.
- Criterion B** To be eligible for its association with a prominent person under Criterion B, the resource should retain some aspects of integrity, although design and workmanship may not be as important as the others.

Criterion C To be eligible for its architectural merits under Criterion C, a resource must retain its physical features that constitute a significant construction technique or architectural style. Critical aspects of integrity for such properties are design, workmanship, and materials. Location and setting will also be important for those resources whose design reflects their immediate environment.

Criterion D Resources significant under Criterion D may not have the type of integrity described under the other criterion. Of the seven aspects of integrity, location, design, materials, and possibly workmanship are the most important.

Thus, the twin pillars of NRHP eligibility are historic *significance* (Criteria A, B, C, and/or D) and *integrity* (preponderance of the 7 aspects). A property must possess both to be considered eligible for inclusion in the NRHP.

Special Criteria Considerations

Typically, certain types of properties are considered *ineligible* for listing in the National Register, although special considerations may warrant their inclusion.

- A. A religious property deriving primary significance from architectural or artistic distinction or historical importance; or
- B. A building or structure removed from its original location but which is significant primarily for architectural value, or which is the surviving structure most importantly associated with a historic person or event; or
- C. A birthplace or grave of a historical figure of outstanding importance if there is no appropriate site or building directly associated with his or her productive life; or
- D. A cemetery which derives its primary significance from graves of persons of transcendent importance, from age, from distinctive design features, from association with historic events; or
- E. A reconstructed building when accurately executed in a suitable environment and presented in a dignified manner as part of a restoration master plan, and when no other building or structure with the same association has survived; or
- F. A property primarily commemorative in intent if design, age, tradition, or symbolic value has invested it with its own exceptional significance; or,
- G. A property achieving significance within the past 50 years (45 years if it is located in the State of California) if it is of exceptional importance.

Forest Service properties that **may, in certain cases**, meet these special considerations include moved buildings or structures, or buildings less than 45 years old. Moved buildings and properties that are less than 45 years old (or that have gained significance only within the last 45 years) are among those properties usually considered ineligible for National Register listing. **Such properties, however, may be eligible for listing if special considerations are met.** For example, certain less-than-45-years-old buildings may be of “extraordinary” architectural or historic significance, e.g., because of their association with an internationally renowned architect, or because of a seminal historic event that occurred there sometime during the last half-century.

V. NRHP Eligibility

Assessment of Significance

The Chico Plant Introduction Garden (present-day Chico Seed Orchard Administrative Site, Forest Service Site #05-08-60-02) was established in 1904 as a horticultural facility for the purposes of introducing exotic food crops and ornamental plants. This property was singularly unique as the nation's second and largest federally operated plant introduction garden, specializing in the introduction and cultivation of primarily Asian fruit and nut trees in order to expand America's productive land base and variety of commercial food crops. Chico was selected for the site of the federal plant introduction garden given its seasonal rainfall, hot summers, mild winters, fertile alluvial soil, long growing season, water supply, and extensive irrigation facilities which were well suited to support a wide variety of crops.²⁰⁴ The historic core of the 209-acre property is associated with significant contributions to regional and national agricultural industries, and to the sciences of plant biology, crop husbandry, and horticulture.²⁰⁵ Historic exotic plantings on the property are also associated with the storied USDA Plant Explorer Frank N. Meyer, in whose name the Crop Science Society of America today gives its award for distinctive service to the National Plant Germplasm System.

Buildings on site date from as early as 1905 and as recently as 2005. Buildings, structures, and objects on site that pre-date 1973 were constructed to support the USDA Agricultural Research Service's plant introduction and dissemination program, and are associated with the significant contributions of this property. Pre-1973 buildings, structures, and objects occur within the property's period of significance and contribute to the property's historical significance, if they have retained integrity. Nine buildings and at least five structures on site date to the property's period of significance, but only eight of those nine buildings and two of those five structures retain sufficient integrity to be considered features that contribute to the historic significance of the property. Eight of 14 areas containing historic exotic plantings and three individual plantings retain sufficient integrity to convey the significant associations of the property. Two of 14 areas containing historic exotic plantings and one individual planting are directly associated with the pioneering work of USDA Plant Explorer Frank N. Meyer.

The Chico Plant Introduction Garden (today's Chico Seed Orchard Administrative Site; Forest Service Site #05-08-60-02) is managed by the Mendocino National Forest of the USDA Forest Service. Buildings, structures, and objects that post-date 1974 were constructed after conveyance of the property to the USDA Forest Service to support the Forest Service's regional reforestation program, as well as to encourage local community partnerships through special-use building permits. 11 buildings and 23 structures located on the property date to this period, are less than 45 years old, and thus fall outside the historic period of significance for the property (see Table 6 for a list of these buildings and structures).

²⁰⁴ Moon, *Chico*, 37; Fairchild, *The World was my Garden*, 300; Graham, "Plant Introduction Garden at Chico," 16.

²⁰⁵ Jones & Stokes Associates, Inc., *Chico Plant Introduction Garden*, 7.

Area of Significance

The Chico Plant Introduction Garden is associated with areas of significance including agriculture, commerce, and politics/government.

Period of Significance

The period of significance encompasses the operational period of the Chico Plant Introduction Garden that produced a horticultural and commercial output that is associated with significant contributions to regional and national agricultural industries, and to the sciences of plant biology, crop husbandry, and horticulture.²⁰⁶ This period dates from 1904, the date of the establishment of the garden, to 1973, the date when on-site horticultural research operations were terminated and the garden's collection began to be dismantled.

Assessment of Integrity

Historic Core of Property

The historic core of the Chico Plant Introduction Garden (today's Chico Seed Orchard Administrative Site; Forest Service Site #05-08-60-02) consists of a concentrated area, approximately 30 acres in size, in the near vicinity of where Comanche Creek flows through the property. It includes the office building cluster and the historic buildings and structures of the headhouse building cluster, within which applied scientific investigations and support activities were undertaken during the property's period of significance. The historic core also includes the barn as an historic ancillary building with a support function. The common aesthetic theme tying these buildings and structures into one cohesive design as a rural historic landscape are the areas vegetated by ARS-era historic exotic plantings, eight of such areas occur within the property's historic core. These historic exotic plantings are the product of foreign botanical missions conducted by the Agricultural Research Service of the USDA, and represent not only commercially successful agricultural introductions (such as pistachio, kiwifruit, Meyer lemon, and 'timber' bamboo), but also experimental introductions that did not attain commercial success (jujube) or that were cultivated for purposes other than as food crops (*Camptotheca acuminata*), as well as ornamental plantings that manifest a full picture of the suite of horticultural research activities that took place at the Chico Plant Introduction Garden during its period of significance (1904-1973).

The historic core of the Chico Plant Introduction Garden retains its location, its design as a rural historic landscape, its setting as a horticultural facility focusing on foreign plant introductions, and its association with significant contributions to regional and national agricultural industries, and to the sciences of plant biology, crop husbandry, and horticulture. The eight areas of historic exotic plantings that have retained integrity within the property's historic core not only convey the property's historic feeling, but also serve as the common aesthetic theme that ties the property's historic buildings and structures into a cohesive design as a rural historic landscape. The property's historic core exhibits sufficient historic physical features and characteristics to adequately convey its historic identity and the historic nature of on-site events that have made a significant contribution to the broad patterns of our history.

²⁰⁶ Jones & Stokes Associates, Inc., *Chico Plant Introduction Garden*, 7.

To varying degrees, the design, workmanship, and materials of the pre-1974 buildings and structures located within the historic core remain intact. Table 4 below individually lists each pre-1974 building and structure on site, its individual eligibility or lack thereof, and whether it represents a contributing feature to a potential Chico Plant Introduction Garden Historic District to coincide with the property's historic core. Of the buildings and structures within the historic core that date to the property's period of significance, the Tankhouse (Pumphouse) and the domestic well, the Office Annex Building, the Saw/Paint Storage Building (Fumigation Storage), the Barn, the ROP Classroom (Utility Building/Garage), the east well, and the greenhouse retain their original design and workmanship. Though the Office Building (Laboratory) and the headhouse have been modified over time, they retain integrity of location, feeling, setting, and association with the significant contributions for which the district is historically significant. Therefore, they too are contributing features to a potential historic district. Eight of 14 areas with historic exotic plantings are located within the property's historic core, retain integrity, are contributing features to the potential historic district. These eight areas have been evaluated as individually eligible for NRHP listing as sites within a rural historic landscape which individually manifest the historic nature of on-site events that have made a significant contribution to the broad patterns of American history. Three plantings (the Meyer lemon and the mother and father kiwifruit vines) have been evaluated as individually eligible for NRHP listing as historic objects in and of themselves.

Outside of Historic Core of Property

Outside of the 30-acre historic core, the feeling of the 209-acre property's design, materials, equipment, and mission have evolved over time, most notably in 1974 when the property was conveyed to the USDA Forest Service. Outside of the historic core, the feeling of the property today evokes not exotic plant introductions but products of the reforestation program of the Pacific Southwest Region of the USDA Forest Service. 131 acres of the property today host source-identified genetically improved trees for the reforestation program of the Pacific Southwest Region. Species dedicated to this program present on property include ponderosa pine, Douglas-fir, rust-resistant sugar pine, Port Orford cedar, and Afghanistan pine.

Many of the buildings and structures constructed or installed since 1980 are modern in appearance, with aluminum siding and rooves, metal casement windows, and other common 21st-century building materials. Of the historic buildings and structures located outside of the property's historic core, the setting and feeling of the Pumphouse at Creek (Butte Creek Pumphouse), the irrigation standpipes, and the old residence/Site Host area well have been altered to the degree that they lack a preponderance of integrity, and are therefore non-contributing features to the potential Chico Plant Introduction Garden Historic District. Six of the 14 areas containing historic exotic plantings are located outside of the property's historic core, and have lost integrity of design, setting, and feeling, given their proximity of viewshed to modern buildings and structures and post-1974 seed orchards.

National Register Recommendations

The Chico Plant Introduction Garden is a significant site to which a number of fruits and nuts found in supermarkets today trace their commercial origins as a result of the research, experimentation, and propagation that occurred at this facility. Most notably, 40 years of experimental research in pistachio horticulture at the Chico Plant Introduction Garden resulted in a commercial variety of pistachio, the 'Kerman' cultivar, which in tandem with other climatic and entrepreneurial factors, elevated the United

States into the largest producer and distributor of pistachio nuts in the world.²⁰⁷ The property and its historic exotic plant introductions are also intimately associated with the work of early USDA Plant Explorer Frank N. Meyer, an early and storied plant explorer whose contributions to modern agriculture have revolutionized the suite of what are considered American food crops.

The historic core of the property exhibits sufficient historic physical features and characteristics to adequately convey its historic identity and the historic nature of on-site events that have made a significant contribution to the broad patterns of our history. This historic core maintains its integrity of location, setting, association, feeling, and to an extent, design, workmanship, and materials. The historic core corresponds with the proposed historic district, as depicted in Figure 326 below, and consists of the office building cluster, the headhouse building cluster, the barn, and adjacent historic exotic plantings and landscape features. The period of significance for the property is 1904-1973 and is associated with the areas of significance of agriculture, commerce, and politics/government. Because the buildings, structures, and plantings that demonstrate integrity have retained their association with significant contributions to regional and national agricultural industries, and to the sciences of plant biology, crop husbandry, and horticulture, the Chico Plant Introduction Garden is a potential historic district. Contributing features of the potential Chico Plant Introduction Garden Historic District are the Tankhouse (Pumphouse) and domestic well, the Office Building (Laboratory), the Office Annex Building, the Saw/Paint Storage Building (Fumigation Storage), the headhouse, the Barn, the ROP Classroom (Utility Building/Garage), the east well, the greenhouse, eight of 14 areas with historic exotic plantings, and three individual historic exotic plantings (the Meyer lemon and the mother and father kiwifruit vine).

The eight areas with historic exotic plantings shown in Figure 326 below have also been evaluated as individually eligible for NRHP listing as sites within a rural historic landscape which individually manifest the historic nature of on-site events that have made a significant contribution to the broad patterns of American history. Three individual historic exotic plantings (the Meyer lemon and the mother and father kiwifruit vines) have been evaluated as individually eligible for NRHP listing as historic objects in and of themselves.

²⁰⁷ Ferguson, "The California Pistachio Industry," 39-42; "FAOSTAT: Crops."

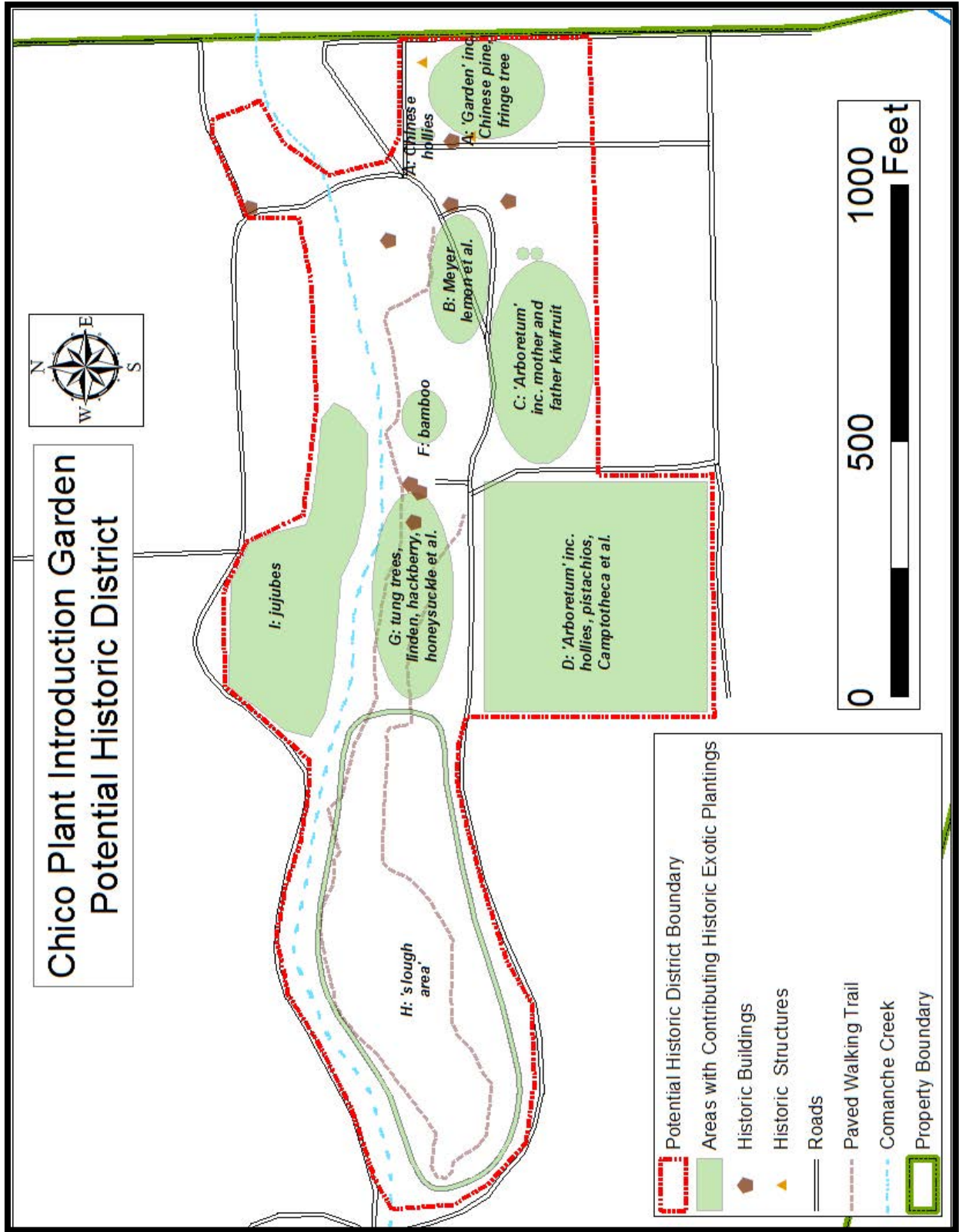


Figure 326: Boundary and features of the Chico Plant Introduction Garden Potential Historic District

Qualifying Criteria

The Chico Plant Introduction Garden is historically significant as a horticultural facility associated with significant contributions to regional and national agricultural industries, and to the sciences of plant biology, crop husbandry, and horticulture. The property's buildings, structures, sites, and objects that date to the period of significance and demonstrate integrity are therefore associated with events that have made a significant contribution to the broad patterns of our history and are **eligible as contributing features of a historic district for the NRHP under Criterion A**. Eight areas with historic exotic plantings individually manifest the historic nature of on-site events that have made a significant contribution to the broad patterns of our history, and are therefore **individually eligible for listing on the NRHP as sites associated with a rural historic landscape**. Three plantings (the Meyer lemon and the mother and father kiwifruit vines) individually manifest the historic nature of on-site events that have made a significant contribution to the broad patterns of our history, and are therefore **individually eligible for listing on the NRHP as historic objects**.

Two of 14 areas containing historic exotic plantings (Area A and Area G) and one individual planting (the Meyer lemon) are directly associated with the pioneering work of storied USDA Plant Explorer Frank N. Meyer, in whose name the Crop Science Society of America today gives its award for distinctive service to the National Plant Germplasm System. The significance of this individual is demonstrated by the plantings themselves as a legacy of the man who brought these plants back from parts of the world that were at the time not well catalogued for their potential food crops, and in some cases had never been traversed by western explorers. Since two areas with historic exotic plantings and one individual planting (the Meyer lemon) are intimately associated with this significant person, they are **eligible for the NRHP under Criterion B**.

Save for the ARS-era historic exotic plantings themselves, there is no one common architectural theme amongst the historic structures on site at the Chico Plant Introduction Garden, but a combination of multiple themes that are not readily discernable given the history of alterations and building periods. As such, the buildings of Chico Plant Introduction Garden are **not eligible for the NRHP under Criterion C**.

The property is **not eligible for the NRHP under Criterion D**. The history of the Chico Plant Introduction Garden has been adequately documented and its historic context well understood. Further study is unlikely to yield additional significant information important to history.

Criterion G is not applicable to the Chico Plant Introduction Garden as its period of significance ends in 1973, which is older than the 45-year cut-off date advocated by the State of California Office of Historic Preservation.

Table 4. Historic (>45 years old) Building/Structure/Object Eligibility

Building/Structure/Object; Facility ID#	Date	Individually Eligible for NRHP	Contributing Feature to Chico Plant Introduction Garden Historic District
Tankhouse (Pumphouse) and domestic well; #1640	ca. 1905	No – Not individually significant.	Yes
Office Building (Laboratory); #2006	1907	No – Lacks integrity of original design and feeling.	Yes – Most modifications to building design occurred within the district’s period of significance. Retains integrity of location, setting, and association.
Office Annex Building; #2621	1921	No – Not individually significant.	Yes
Pumphouse at Creek (Butte Creek Pumphouse); #1645 (off-property)	1924	No – Not individually significant.	No – Lacks integrity of setting, feeling, and association.
Saw/Paint Storage Building (Fumigation Storage); #2625	1928	No – Not individually significant.	Yes – Retains integrity of location, design, materials, and association, and dates to the district’s period of significance.
Headhouse; #2814	1932	No – Lacks integrity of materials following 1981 remodel.	Yes – Retains integrity of location, design, feeling, and association, and dates to the district’s period of significance.
Barn; #2626	1940	No – Not individually significant.	Yes – Retains integrity of location, materials, workmanship, and feeling, and dates to the district’s period of significance.
ROP Classroom (Utility Building/Garage); #1520	1941	No – Not individually significant.	Yes – retains integrity of location, setting, association, and feeling, and dates to the district’s period of significance.
Irrigation Standpipes (at least 2)	1924-1957	No – Not individually significant.	No – part of a system that lacks integrity.

Building/Structure/Object; Facility ID#	Date	Individually Eligible for NRHP	Contributing Feature to Chico Plant Introduction Garden Historic District
Old Residence/Site Host Area Well	1941-1974	No – Not individually significant.	No – Lacks integrity of setting, feeling, and association.
East Well	1962	No – Not individually significant.	Yes – Retains integrity of location, design, materials, workmanship, and association.
Greenhouse; #2806	1966	No – Not individually significant.	Yes – retains integrity of location, design, association, and feeling, and dates to the district's period of significance.

Table 5. ARS-era Historic Exotic Plantings Eligibility

Site/Object (names based on labels found in Figure 191)	Location	Date Range	Individually Eligible for NRHP	Contributing Feature to Chico Plant Introduction Garden Historic District
A: 'Garden' inc. Chinese pine, fringe tree	headhouse building cluster; east and south of pumphouse (tankhouse)	ca. 1908- 1935	Yes – Eligible site under Criteria A and B.	Yes
F: bamboo	office building cluster	ca. 1909	Yes – Eligible site under Criterion A.	Yes – retains integrity of location, design, setting, and association with office building cluster.
K: ornamental pistachios, eucalyptus	West Orchard Road (formerly Pistacia or Pistache Avenue)	1910	No – lacks integrity of design and feeling.	No – lack of integrity of design, feeling, and setting.

Site/Object (names based on labels found in Figure 191)	Location	Date Range	Individually Eligible for NRHP	Contributing Feature to Chico Plant Introduction Garden Historic District
G: tung trees, linden, hackberry, honeysuckle et al.	office building cluster	ca. 1910 et seq.	Yes – Eligible site under Criteria A and B.	Yes – retains integrity of location, design, setting, and association with office building cluster.
I: jujubes	north of Comanche Creek	ca. 1910- 1973	Yes – Eligible site under Criterion A.	Yes
J: pistachios, ornamentals, cedars, succulents	old residence/site host area	ca. 1910s et seq.	No	No – lack of integrity of design, materials, workmanship, feeling, and setting.
Meyer lemon	headhouse building cluster: west of the saw/ paint storage building (fumigation storage)	ca. 1910s	Yes – Eligible object under Criteria A and B.	Yes
B: Meyer lemon et al.	headhouse building cluster: interior median of parking area at northwest corner of headhouse	ca. 1910s- 1930s	Yes – Eligible site under Criteria A.	Yes
C: ‘Arboretum’ inc. mother and father kiwifruit	west of headhouse building cluster, south of office building cluster	ca. 1930s- 1973	Yes – Eligible site under Criteria A.	Yes

Site/Object (names based on labels found in Figure 191)	Location	Date Range	Individually Eligible for NRHP	Contributing Feature to Chico Plant Introduction Garden Historic District
D: 'Arboretum' inc. hollies, pistachios, <i>Camptotheca</i> et al.	south of office building cluster	ca. 1930s- 1973	Yes – Eligible site under Criteria A.	Yes
H: 'slough area'	west of office building cluster	ca. 1930s- 1973	Yes – Eligible site under Criterion A.	Yes
E: pistachios, plums, <i>Camptotheca</i> , grapes	south of south well	ca. 1931- 1973	No – lacks integrity.	No – lacks integrity.
mother and father kiwifruit vines	headhouse building cluster (west of shadehouse)	ca. 1935	Yes – Eligible objects under Criteria A.	Yes
L: fruit trees	south of search- and-rescue headquarters building cluster	ca. 1940s- 1973	No – lacks integrity.	No – lacks integrity.
M: plums	south of search- and-rescue headquarters building cluster	ca. 1940s- 1973	No – lacks integrity.	No – lacks integrity.
N: kiwifruit et al.	Southeast corner of property	ca. 1938- 1963	No – lacks integrity.	No – lacks integrity.

Table 6. Non-historic (<45 years old) Building/Structure/Object Eligibility

Building/Structure/Object; Facility ID#	Date	Individually Eligible for NRHP	Contributing Feature to Chico Plant Introduction Garden Historic District
North Well	1979-1980	No – Less than 45 years old.	No – Does not date to the district’s period of significance.
South Well	1979-1988	No – Less than 45 years old.	No – Does not date to the district’s period of significance.
Tree Cooler 2 of 3; #2636	ca. 1980	No – Less than 45 years old.	No – Does not date to the district’s period of significance.
Supplemental Storage Cabinet	ca. 1980	No – Less than 45 years old.	No – Does not date to the district’s period of significance.
Energy Control Box	ca. 1980	No – Less than 45 years old.	No – Does not date to the district’s period of significance.
Stone Monument	1981	No – Less than 45 years old.	No – Does not date to the district’s period of significance.
Shadehouse; #2805	ca. 1981	No – Less than 45 years old.	No – Does not date to the district’s period of significance.
Pump/Injector Building; #2629	ca. 1981	No – Less than 45 years old.	No – Does not date to the district’s period of significance.
Informational Kiosk	1984-1992	No – Less than 45 years old.	No – Does not date to the district’s period of significance.
Shop/Storage Building (Old Search-and-Rescue); #12116	1987-1992	No – Less than 45 years old.	No – Does not date to the district’s period of significance.
Gasoline Dispenser	Installed ca. 1987	No – Less than 45 years old.	No – Does not date to the district’s period of significance.
Shop Road Storage Shed	Installed ca. 1987	No – Less than 45 years old.	No – Does not date to the district’s period of significance.
Old Residence/Site Host Area Storage Shed	Installed ca. 1987	No – Less than 45 years old.	No – Does not date to the district’s period of significance.
Vehicle Bridges (2)	ca. 1989	No – Less than 45 years old.	No – Does not date to the district’s period of significance.
Grill	ca. 1990	No – Less than 45 years old.	No – Does not date to the district’s period of significance.
Day-use Area Toilet; #12115	1992	No – Less than 45 years old.	No – Does not date to the district’s period of significance.
Tree Cooler 3 of 3 (Willamette Barn); #2637	Relocated ca. 1992-1995	No – Relocated.	No – Relocated.

Building/Structure/Object; Facility ID#	Date	Individually Eligible for NRHP	Contributing Feature to Chico Plant Introduction Garden Historic District
Butte County Sheriff Search-and-Rescue Headquarters	ca. 1993	No – Less than 45 years old.	No – Does not date to the district’s period of significance.
Footbridge	pre-1994	No – Less than 45 years old.	No – Does not date to the district’s period of significance.
Mobile Office	Installed ca. 1994	No – Less than 45 years old.	No – Does not date to the district’s period of significance.
O.C. Crew Office Building; #2015	Installed ca. 1994	No – Less than 45 years old.	No – Does not date to the district’s period of significance.
Storage Building (Warehouse); #2635	1997	No – Less than 45 years old.	No – Does not date to the district’s period of significance.
Butte County Education Extension Office	Installed ca. 1998-2002	No – Less than 45 years old.	No – Does not date to the district’s period of significance.
Fire Cache Containers (2)	Installed ca. 1998-2002	No – Less than 45 years old.	No – Does not date to the district’s period of significance.
Open Garage; #2328	2005	No – Less than 45 years old.	No – Does not date to the district’s period of significance.
Flammables and Combustibles Storage Container	Installed ca. 2003-2006	No – Less than 45 years old.	No – Does not date to the district’s period of significance.
Shade Canopy	pre-2008	No – Less than 45 years old.	No – Does not date to the district’s period of significance.
New Search-and-Rescue Storage Sheds (5)	Installed ca. 2013-2015	No – Less than 45 years old.	No – Does not date to the district’s period of significance.
Shop Road K-Line Container	Installed ca. 2017-2018	No – Less than 45 years old.	No – Does not date to the district’s period of significance.

VI. Finding of Effect

Any undertaking that potentially modifies, decommissions, or removes from federal ownership a NRHP-eligible property should be considered for its potential effects to the historic property, as defined by the National Historic Preservation Act, Section 106 (36 CFR Part 800).

Such actions on eligible buildings, structures, objects, and sites that are contributing features of the potential Chico Plant Introduction Garden Historic District would have an *adverse effect* per 36 CFR Part 800.5(b) upon the entire historic district, which is potentially eligible for listing on the National Register of Historic Places. Once any undertaking is developed, the full impacts of the actions should be considered for their effects on the potential Chico Plant Introduction Garden Historic District.

If concurrence is received on their eligibility, no eligible historic exotic plantings should be destroyed or otherwise removed from the property. Pruning and beneficial thinning, however, should occur on the historic exotic plantings and surrounding vegetation in order to promote the longevity of eligible historic exotic plantings. Secondary-growth trees and vegetation of an exotic origin that are the product of natural plant succession are not considered eligible for listing on the National Register, and may be removed or otherwise impacted as deemed necessary. The mother/father tree or plant of which the natural plant succession is the progeny and which dates to the property's period of significance, is considered eligible for listing on the National Register and should not be destroyed or otherwise removed from the property.

Any actions undertaken on buildings, structures, objects, or sites of the Chico Plant Introduction Garden (the present-day Chico Seed Orchard Administrative Site) that are modern in their construction or that are non-contributing features of the potential Chico Plant Introduction Garden Historic District would have no adverse impact on potentially eligible buildings, structures, objects, and sites of the historic district. Modern understory plants or other modern plantings located within areas with historic exotic plantings may be destroyed or removed (such as genetically modified ponderosa pines within Area A), including those plantings that may date to the period of significance but are not the product of foreign botanical exploration missions of the Agricultural Research Service of the USDA (such as native valley oak trees). Nevertheless, if an undertaking proposes the removal of non-contributing ARS-era historic exotic plantings that are located outside of the historic core, it is recommended that they be transplanted if feasible to one of the arboreta or another site within the historic core in order to continue the historic practice of preserving "many specimens in the slough area to save them."²⁰⁸

Proposed Undertaking

There is presently a proposal to demolish two buildings that have been evaluated as contributing features to the potential Chico Plant Introduction Garden Historic District. These two buildings are the ROP classroom (utility building/garage; #1520) and the greenhouse (#2806). The two buildings are the most derelict of the eight buildings included as contributing features to the potential historic district, though this undertaking still constitutes an adverse effect on the entire potential historic district, the boundaries of which correspond with this undertaking's Area of potential Effect (APE), as depicted in Figure 326.

²⁰⁸ Smith, "Interview with Robert Smith 7-25-91," 4.

The greenhouse dates to 1966, at the tail end of the potential historic district's period of significance, and was initially designed as a temporary structure at the same site on which other temporary greenhouses had been built since 1905. Since the present-day greenhouse manifests a continuation of precedent and practice dating back to 1905, it is representative of the property's association with significant trends in American agriculture. However, since it was originally designed as a temporary structure, in and of itself it is not integral nor indispensable to the historic character of the potential historic district as a whole, particularly if appropriate mitigation measures are implemented. General deterioration of the building have impacted the greenhouse's structural integrity, if not its historic integrity. This has resulted in some glass panels of the greenhouse being replaced with fiberglass panels. In short, the greenhouse retains integrity in terms of location and design, though elements of its setting, materials, and feeling have been altered as a product of general deterioration of the building and non-use of the grounds as a nursery since 2004.

The ROP classroom (utility building/garage), constructed in 1941, today exhibits boarded-up windows that no longer contain sashes and a generally dilapidated appearance that obscures the building's feeling and workmanship. Alterations that occurred after 1979 removed the functional design of the building from that of a garage to that of a storage room, essentially altering aspects of both materials and feeling at the same time. Furthermore, the ROP classroom occurs within the viewshed of the older and better-maintained Office Annex Building, with a number of ARS-era historic exotic plantings located directly to the ROP classroom's north. An argument could be made that the ROP Classroom detracts from the setting, feeling, and association of the older and more intact Office Annex building by obscuring these historic exotic plantings and largely removing visibility of the primary façade of the Office Annex Building when viewed from the west or from the nearby paved walking trail.

Given the considerations described above, the Mendocino National Forest does not feel that the demolition of these two buildings would render the potential Chico Plant Introduction Garden Historic District ineligible, so long as appropriate mitigation measures are implemented.

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