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Chapter 21. Workforce Management

“Workforce management” is the planning, selection, scheduling, and oversight of labor for trail maintenance and construction. It involves identifying and prioritizing trail projects and matching them with the appropriate labor force, as well as providing ongoing logistical support, training, and daily and weekly operational planning. Because labor costs are an expensive component of many trail projects, effective management is critical to the success and cost effectiveness of the project.

21.1. Staff Positions in a Department Trails Program

21.1.1. Crew Member

A Crew Member is a worker on a trail crew but may also be assigned to work on individual trail repair assignments or support projects such as tool repair and maintenance or material inventory. Within the Department, this position is usually filled by a Park Maintenance Aid or Senior Maintenance Aid.

21.1.2. Crew Leader

The Crew Leader directs the daily activities of a departmental trail crew. Duties may include gathering and organizing the materials, tools, and equipment needed for a project and ensuring that they are transported to and from the worksite; transporting the crew to the worksite; providing skills training and safety reviews such as a task hazard analysis; organizing and directing the crew’s work assignments; monitoring the crew’s work; and providing quality control and maintaining daily production records. He or she is responsible for keeping a copy of the project’s environmental compliance and permitting documents on the project at all times. This position is non-supervisory and cannot take corrective action against a Crew Member. This person also cannot perform employee evaluations, but can assist the Trail Supervisor in the assessment of Crew Members. Within the Department this position is usually filled by a Park Maintenance Worker 1, Skilled Laborer, Laborer, or Park Maintenance Assistant.

21.1.3. Crew Supervisor for Outside Agency Crews

When working with an outside agency crew (e.g. California Conservation Corp (CCC), CalFire, or other), the Crew Supervisor is the supervisory position (e.g. Conservationist 1 with the CCC or Fire Captain with CalFire) responsible for directing the activities and individual assignments of the crew.

21.1.4. Project Leader

The Project Leader is a Department employee who oversees the work of an outside agency crew. When working with CalFire or CCC crews it is important to note that the Fire Captain and Conservationist 1 (C1) are supervisory positions. Furthermore, the Fire Captain has sole responsibility for the crew and must maintain “chain of

custody.” Directing the work of the crew must go through the Fire Captain or C1. The Project Leader gathers and organizes the materials, tools, and equipment needed for a project and ensures that they are transported to and from the worksite. Working with and through the Fire Captain or C1, the Project Leader provides skills training and safety reviews such as the task hazard analysis. This position closely monitors the crew’s work, providing quality control and maintaining daily production records. Within the Department, the Project Leader is usually filled by a Park Maintenance Worker 1, Skilled Laborer, Laborer, or Park Maintenance Assistant.

21.1.5. Trail Supervisor

The Trail Supervisor is responsible for the overall planning, management, and operations of a trail system or portion of a trail system. The role of this position varies depending on the size, scope, and complexity of the trails program. In a small program, this person may serve as the District’s Trail Program Manager. In a large program, this person may be one of several Trail Supervisors responsible for a number of park units covering a large geographical area. Typically this position is responsible for the preparation of monthly, yearly, and two-year trail project schedules; developing project evaluation forms, permits, or control agency consultations; purchasing and organizing all of the tools, equipment, and materials needed; hiring, organizing, training, and supervising trail crews and Crew Leaders; evaluating the performance of the trail crew and Crew Leader; reviewing and orientating the trail crew to the project including the environmental compliance and permitting requirements; overseeing the project and ensuring that the project is on schedule through weekly project reviews; following the environmental compliance document and permit requirements and meeting the Department’s trail standards; and ensuring that daily production records are maintained and reviewed to detect potential issues with crew production and meeting project timelines. In a very small trails program, the Trail Supervisor may perform many of the duties of the Crew Leader. Within the Department, the Trail Supervisor position is usually filled by a Park Maintenance Supervisor.

21.1.6. Trail Program Manager

The Trails Program Manager is responsible for planning, coordinating, organizing, and implementing a district’s trails program. In a large trails program, this position is usually management level, but in a very small trails program it may be supervisory. This position works with the Trail Supervisors and other district program managers to identify and schedule trail projects, and prioritize those projects; develops the trail program’s budget; submits projects to the Park Infrastructure Database; manages those projects that are implemented; reviews and monitors all purchasing and contracting documents, employee time sheets, and other program expenditures; supervises Trail Supervisors and closely monitors their projects and project schedules; assists Trail Supervisors in identifying problems and formulating corrective measures when a project falls behind schedule; hiring and evaluating Trail Supervisors; consolidating and maintaining trail project production data submitted by Trail Supervisors; and developing end-of-program reports that identify the quantity,

cost, and value of completed projects. In a large trails program, the Trails Program Manager also directs the sharing and distribution of rolling stock, equipment, tools, materials, and supplies needed to support the district's trail projects. Trail Program Managers perform project reviews at regular intervals. Within the Department, this position can be filled by a variety of classifications including Park Maintenance Chief, Senior Landscape Architect, or Senior Engineering Geologist.

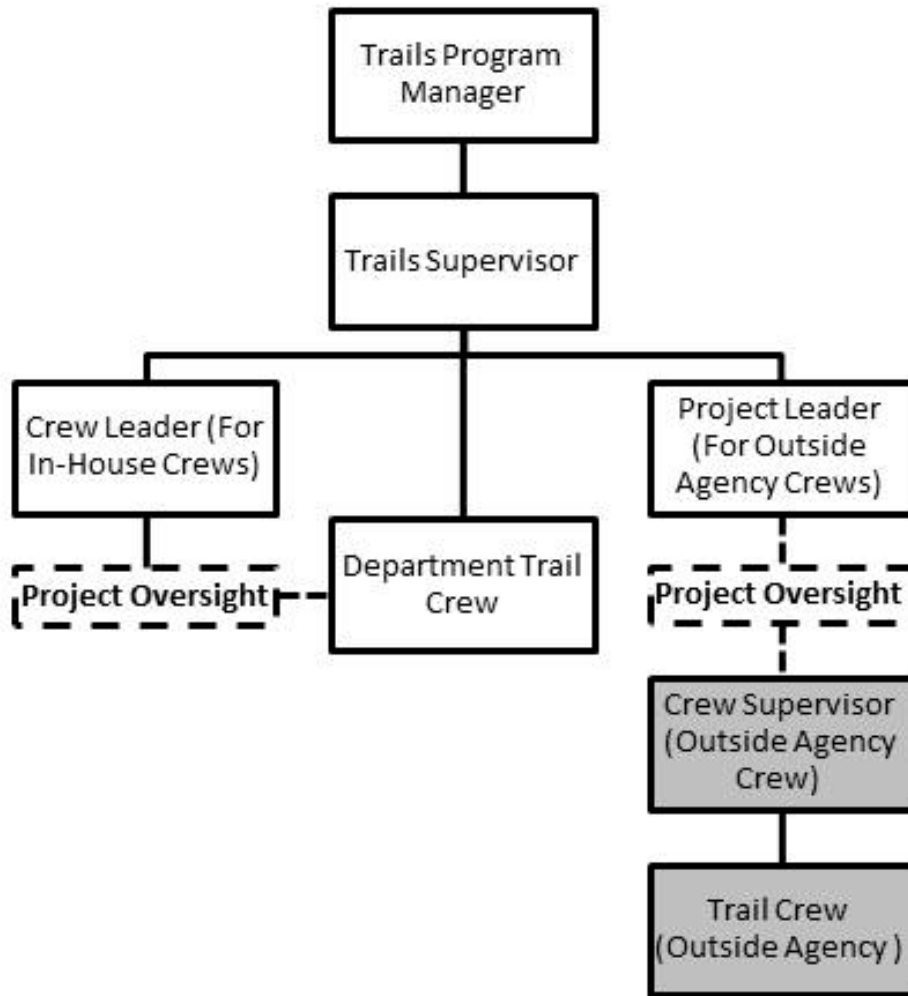


Figure 21.1 - Organizational Chart of Positions in a Department Trails Program

21.2. Management Basics

Regardless of the workforce used, there are a number of important procedures and rules of conduct that should be followed by crew members, crew leaders, project leaders, trail supervisors, and trail program managers.

21.2.1. Project Orientation

Before the start of each new trail project, the trail crew is given a thorough orientation to the project including the reason or need for the project, the desired

outcome, the individual tasks required to complete the project, the order in which the tasks will be performed, and the time anticipated to complete each task and the entire project. If possible, this orientation should occur at the project worksite. Linear projects, such as a trail reroute, will require hiking the crew along the length of the new alignment.

During orientation, solicit questions and comments from the crew to clarify project details and provide an opportunity for the crew to suggest ideas. It is important that the crew have a clear vision of what they will be doing and have an opportunity for input. This kind of information exchange increases the crew's ownership and investment in the project. From a morale standpoint, no one likes to come to work every day not knowing why they are doing the work assigned to them, what to anticipate next, and how it helps accomplish the goal.

21.2.2. Training

With each trail project there is going to be a need for specialized training. Training is essential to improve worker safety, productivity, morale, and the quality of the work performed. It is a good investment not only for the immediate project but for future projects. It is especially critical for in-house crews because they will be working on many projects for a long period of time and are a source of future crew leaders and supervisors.

21.2.3. Leading/Supervision

When leading or supervising, be open to questions and ideas from the crew. Engaging with the crew is an opportunity to impart information and further the crew's knowledge. Responses such as "we have always done it that way," "that is not your concern," or "just do what you're told" are not appropriate. Crew members deserve an honest and well thought-out answer. If you don't know the answer or don't have a good explanation, then maybe you need to find the answer or be open to a different idea. No one has all the answers or always knows the best way to perform a task or resolve a problem. Crew members sometimes come up with ingenious methods or solutions to a problem encountered during a project. Listen to the crew member and if their idea won't work, explain why, and, if they have a good idea, use it and give them credit.

21.2.4. Project Review

During the course of a project there should be several reviews conducted by the trail supervisor and program manager. It is important that the project be reviewed frequently enough that trail construction, production, and project cost issues are identified and corrected before a significant investment in labor and materials occurs. Correcting problems that have been overlooked for a significant amount of time can be costly in terms of funds, time, and crew morale.

21.2.5. Chain of Command

It is important that during project review all work-related comments go through the chain of command. For example, if the trail supervisor is reviewing the crew's work and notices that a task has not been performed to agency standards, do not tell the crew members that the work is incorrect and to do it over. Instead, take note of the problem and talk with the crew leader later, away from the crew. The crew leader will then have the opportunity to explain any extenuating circumstances to the supervisor and identify a solution. The crew leader can explain the problem to crew later and work with them to make the necessary corrections. When a supervisor corrects the crew and redirects the crew's work, it undermines the crew leader's authority and credibility. It also can demoralize the crew and add general confusion to the project. Comments to the crew by the supervisor during project review should be positive or simply conversational in nature. This protocol applies to all types of crews. If working with a non-park crew, these comments are from the project leader to the crew's supervisor.

Similarly, it is important that project-related questions and comments from the crew go through the chain of command. If a crew member has a pointed question or a concern about a project, it needs to go through the crew/project leader or the supervisor of the non-park crew. If a trail supervisor starts addressing questions and concerns directly to crew members, the trail supervisor may inadvertently give out information that conflicts with what the crew/project leader provided or give information not yet provided to the crew/project leader. Contradictory information erodes the credibility of the crew/project leader and potentially sets up a conflict between the trail supervisor and the crew/project leader. Savvy crew members will sometimes deliberately ask pointed questions or state concerns to a trail supervisor or program manager to get a different answer. This tactic is appropriately called "being mom-and-pop'd" because it is the same thing children do to their parents to get what they want. Following the chain of command and maintaining close communication between crew/project leaders, trail supervisors, and trail program managers will prevent this problem from developing.

21.3. Workforce Selection

There are several different workforces available for trail work; each has its advantages and disadvantages. When considering which workforce to use, keep in mind the following criteria.

- Cost
- Level of supervision/support required
- Safety concerns
- Skill with basic tools and/or power tools
- Knowledge and experience
- Physical capability (fitness and strength)
- Agency policies regarding the use of power tools
- Availability (long vs. short term)

- Work ethic and motivation
- Ability to be trained
- Preferred types of projects
- Length of workday
- Contracting requirements
- Labor force work history

Remember that every crew member deserves respect. Any crew is capable of out-performing (or being out-performed by) another on any given day. Recognize the strengths of each type of workforce and match it to the appropriate project, supervision, and support.

21.4. Volunteer Crews

Volunteer crews vary from individuals that turn out once a year to trained and organized groups dedicated to a single park or trail system.

21.4.1. Cost

Volunteers are low cost, although providing adequate tools, equipment, and/or supervision can get expensive. For example, maintaining hand tools for 100 people who show up once a year, or providing incentives, such as water bottles, t-shirts, or barbecues, can be expensive. Like other workforces, volunteers require training and supervision. These costs can be offset by the amount of quality trail work they produce. The bottom line in any project is the cost per unit of work produced.

21.4.2. Leadership/Supervision

No crew, regardless of its experience or skill, should perform trail work without qualified direction or supervision. Most volunteer groups lack qualified leaders. Volunteers require skilled, knowledgeable, encouraging, and patient leaders. A leader cannot expect the same work from a volunteer trail crew as from an experienced, professional trail crew.

21.4.3. Skills, Knowledge, and Training

Generally, volunteers do not have well-developed trail work skills and lack knowledge in trail construction. Most start out as trail enthusiasts who enjoy hiking, horseback riding, or biking but have never worked on a trail. Although many of the skill sets used in trail construction overlap with those of the general construction industry, the application must be modified to fit the requirements of the outdoors. Even the proper use of basic hand tools is foreign to many volunteers. They are also not likely to be experienced in working as a crew.

This type of crew requires a well-planned and developed training program. Trainers must be well-versed in trail construction and be able to communicate and work with novice workers. As a group, volunteers are receptive and appreciative of training.

Trained volunteers can evolve into a group of skilled and knowledgeable workers that can train and direct new volunteers. This type of volunteer program is highly successful.

Some volunteer groups, especially those that represent special interests or a specific user group, have some trail work skills, but often their knowledge is incomplete, outdated, or biased to their interests. These groups produce a lot of good work if the design and construction standards are established at the beginning; good leadership and supervision ensures these standards are followed. Otherwise, the result can be unsustainable trail work that does not meet program standards or goals.

Volunteers should not operate power tools or equipment. Power tools should only be used by professional trail workers who have received appropriate training. Power tools increase productivity only when workers have the skill to execute the work safely, efficiently, and with a high degree of control and accuracy. Workers without proper training are prone to accidents, tool breakage, and wasting materials. Unless the volunteer program is comprised of individuals who consistently participate in organized projects and have a long-term commitment to working on trails, volunteers should only use hand tools.

21.4.4. Physical Ability

Volunteers usually do not have a high level of physical fitness. There are exceptions, but volunteers have one of the highest incidences of minor, work-related injuries and accidents. They may not be experienced with heavy physical labor for long periods of time in adverse weather, and can exceed their physical limits before they become aware of a problem. Be careful when selecting projects for volunteers, and monitor the crew so they don't over-stress themselves.

Volunteers actually work for a relatively short period of time. Due to the lack of physical fitness or familiarity with trail tools and work, volunteers tend to "burn out" early. Expect an energetic morning after training and safety review, followed by a long lunch and a short, slow afternoon.

21.4.5. Safety

Volunteers are usually enthusiastic and participate in safety discussions at the beginning of the workday, but they may need frequent reminders. Safety topics, such as dehydration, poison oak, ticks, rattlesnakes, and sun exposure, need to be covered in-depth. Safety procedures, such as safe tool use, maintaining separation when using tools, and maintaining proper footing, must be carefully monitored throughout the day because they are not engrained in the minds of volunteers.

21.4.6. Availability

The availability of volunteers varies. Near a major population center, volunteers are readily available throughout the year. Parks located near urban areas have more volunteer interest than those located in rural settings. Remote locations get sporadic volunteer attendance at best. Unless the trail program is supported by an organized group of volunteers, this workforce is considered only a supplement to other sources.

Volunteer groups are highly motivated and have a strong work ethic until they become fatigued. The volunteers that come back week after week are as durable as any professional crew, but the once-a-year volunteers may begin to fade once the reality of using a hand tool for hours in the hot sun sinks in.

21.4.7. Other Considerations

Projects for volunteers are those that lend themselves to the limitations identified above. Volunteers prefer to see a significant finished product for their efforts. Ideal projects include any that can absorb a large number of people with light supervision and that will yield visible results.

Using volunteers helps build stronger community support that can prove invaluable to a trail program. Updates on backcountry trail conditions and the ability to deal with minor but remote trail repairs (such as small fallen trees) are examples of the services volunteers can provide better than any other workforce.

21.5. Inmate Crews

Inmate crews consist of inmates from county jails, youth authorities, and state prisons. In California, a heavily used workforce is the Conservation (Fire) Camp program jointly managed by the California Department of Forestry and Fire Protection and the California Department of Corrections and Rehabilitation. These crews are comprised of able-bodied inmates that have undergone a vigorous two week physical fitness training program followed by another two weeks in fire safety and suppression techniques. Although, their work priority is emergency fire suppression, these crews may be available for trail projects for at least several months a year.

21.5.1. Cost

Inmate crews are a contracted labor force that is available at a very low cost. Given the value of the work they can perform, the cost is nominal. However, the cost must be accounted for and budgeted.

21.5.2. Supervision

Inmate crews require and deserve strong supervision and direction. The inmates are under the direct supervision of a fire captain. With training, the captain learns

enough about trail standards to oversee simple trail work, such as maintenance brushing, with minimal direction and review by the sponsoring agency (park). For most projects, a project leader that represents the park should be with the crew at all times. Because of the requirement to maintain a chain of custody, staff from the sponsoring agency cannot directly supervise inmates. Staff's role is to direct the project and ensure the quality of the work performed. All direction and communication to the crew is through the captain. A significant determinant of the performance of an inmate crew is the ability of the captain to maintain control and discipline over the crew. The crew is only as good as the captain.

21.5.3. Skills, Knowledge, and Training

Typically, inmates are very skilled with basic hand tools. However, they do not possess trail construction and maintenance skills and knowledge unless they have worked on similar projects in the past. Some inmates possess general construction skills applicable to trail work, which can be a valuable resource. Depending on past training, inmates may also be able to operate power tools. Typically there are at least a few well-trained sawyers on an inmate crew.

Inmates are highly trainable and offer a moderate to high return on training investment. They represent a semi-stable workforce that is willing to learn trail techniques and standards. Most inmates come into the Conservation Camp Program with little or no preconceived notions about trail work and will require some level of training. Project leaders representing the park provide this training with consent of the captain. Most captains are open to learning and willing to comply with the agency's trail standards. Over time, the captain can acquire a great deal of trail construction knowledge, but the work must be carefully directed and monitored by the sponsor to ensure standards are followed. Given the volume of work they are capable of producing, inmate crews are a good investment.

21.5.4. Physical Ability

Inmate crews are also among the most physically fit workers. Besides the physical training they undergo, many use their free time to work out and further increase their strength. Many inmates look at their work as another form of exercise and attack it with vigor.

21.5.5. Safety

There should be no need for basic safety training beyond a general review, because inmates are extensively trained in the use of hand tools as a part of firefighting training. More complex safety concerns, such as a precipitous drop or swift water, are the captain's responsibility to address. A Task Hazard Analysis is conducted by the project leader prior to the start of the project. The captain may ask the sponsor for specialized training or equipment for crew members on an as-needed basis.

21.5.6. Availability

The availability of inmate crews is highly variable because their services are in high demand. During the fire season, they spend weeks or months on assignment. Even if not assigned to a fire, crews must remain readily available and stay within a certain distance of their bus and near a main road during fire season. This restriction limits their availability for much of the year. Maintaining a reputation as a sponsor who is prepared to host an inmate crew and has the skills, knowledge, tools, and materials to keep the crew busy with relevant work is a good way to ensure that an inmate crew will be available.

Individual inmates have a range of work ethics and motivation from highly motivated to unproductive. Sometimes the whole range can be found in one crew. Generally, the work ethic of the crew is a reflection of the captain. A motivated captain culls out lazy crew members and develops the more highly motivated people.

Inmate crews are typically available for short to moderate length workdays. Because the 8-hour shift must begin and end at the inmates' conservation camp, transport time must be included in the regular work hours. The prepared sponsor uses time efficiently by ensuring that when the crew shows up they can start work immediately.

21.5.7. Other Considerations

Inmates can work on any project within the limitations described above. Expect mistakes and repairs if using inmates for detailed carpentry work (e.g., bridge railing installation), but when given proper training and time to develop their skills, they will learn to perform the job correctly. Inmates excel at more physically demanding projects such as aggregate surfacing. Their physical fitness makes them the least likely crew to get injured during long days of hard labor. They can accomplish projects quickly, so the project does not drag on.

A special consideration for working with inmate crews is to ensure that park staff are trained and certified on the laws pertaining to contact with prisoners. This training is conducted by the Department of Corrections at the conservation camp. (See Appendix N, "Digest of Inmate Laws.")

21.6. In-House Crews

Some projects require an in-house workforce comprised of park employees. In-house crews are usually seasonal employees hired for a specific project or series of projects. Seasonal employees at California State Parks are limited to working 1,500 hours per year, and, therefore, may not be available year round depending on project scheduling. Hiring of seasonal in-house crews should be closely coordinated with the project schedule to ensure the crew is available for the entirety of the project.

21.6.1. Supervision

In-house crews require supervision and management. A person with the requisite knowledge and skills is needed to lead the crew each day. This person is responsible for the crew being well prepared and organized. They also ensure that the work is being performed per instructions and the Department's trail standards. The crew leader organizes and directs the crew's work. The trail supervisor in concert with the crew leader monitors the productivity of individual crew members, resolves conflicts between crew members, and ensures the crew is provided with the requisite safety gear, tools, equipment, and materials to perform the job safely and efficiently.

21.6.2. Skills, Knowledge, and Training

The advantage of recruiting and hiring an in-house trail crew is that individuals with previous trail work experience can be recruited. Knowledge and skills of individuals can range from novice to advanced. Regardless, candidates that have previous trail work experience know how hard and demanding trail work can be. They also have a work performance record that can be verified by past supervisors. One potential downside to hiring experienced trail workers is that trail programs vary greatly throughout the United States. Workers may have been taught trail construction and maintenance methods that are contrary to the agency's standards and practices. These individuals can be a liability to the program if they are not willing to adapt to the new standards and practices.

Because in-house crews can work for longer periods of time and be brought back for future work, they provide a level of continuity and consistency that other workforces cannot. The more training and experience they receive, the more valuable they become. Ultimately, most of the crew will be seasoned trail workers that understand what is expected of them and have the knowledge and skills to efficiently produce quality work. Seasoned trail workers also can serve as mentors to new, inexperienced crew members.

Another bonus to in-house crews is that they serve as a source for future trail crew leaders. By observing a crew member's work habits, skills, and relations with fellow crew members, future crew leaders can be identified.

Depending on the level of training, an in-house crew can operate all sorts of power tools and equipment, including mechanized trail equipment when trained, certified, and/or authorized, as required. In-house crews are typically the most skilled and versatile in the operation of power tools.

The ability to use a variety of power tools and mechanized equipment makes in-house crews a highly versatile and efficient labor source. Their skills and knowledge make them ideal for long term and complex projects. Also, remote projects involving long transportation and hiking time work well for in-house crews. Even with an hour-

long hike at the start and end of the workday, the crew can put in eight hours of work during a ten-hour day.

21.6.3. Physical Ability

Over the course of a season, the level of physical fitness of a crew will vary according to the project. For example, during bridge construction, the crew may get out of shape because the work is not as demanding as trail building. However, when assigned to new tread construction, the crew improves their conditioning in a short time. Having a crew leader who motivates individuals to improve their strength and productivity (within the limits of safety) is essential to increasing the physical fitness of the crew.

21.6.4. Safety

In the past, in-house trail crews have had the highest rate of personal injury in the Department due to the environmental conditions the crew works in, the tools and equipment they use, and how physically demanding their work is. Nevertheless, there is no excuse for a poor safety record on trail projects with in-house crews. Employers are responsible for implementation of all elements of the Illness and Injury Prevention Plan, including regular tailgate safety meetings, Task Hazard Analyses, and use of appropriate safety gear. Safety gear includes not just special items, like climbing harnesses and face shields, but also things that wear out and are lost regularly, such as gloves, ear plugs, and safety glasses.

21.6.5. Availability

The availability of in-house crews is more than a function of funding. The pay and housing offered, and the local job market affect the quality and quantity of available crew members. Most trail work does not require advanced construction skills, and sometimes workers with no trail experience but with a hard physical labor background turn out to be excellent employees.

Of all workforces, in-house crews typically have the longest workday. Usually, trail project preparation occurs outside normal work hours, which means overtime for those doing the prep work. In-house crews are also available for spike camp projects. These projects are expensive and require long workdays. Going to a schedule of 10 hours a day, four days a week instead of eight hours a day, five days a week means more work can be completed with less commute time. The crew must be in shape to handle the long hours.

21.6.6. Cost

An in-house crew is the most expensive workforce. Employee expenses include sick leave, vacation, and overtime pay, worker's compensation claims, training, and per-diem. Workshop facilities, tools, equipment, vehicles, and personal protective equipment must also be provided. Employees represent a significant administrative

workload for time keeping, supervision, and discipline. The biggest issue with in-house crews is that they get paid whether they are working productively or not. Instead of paying only for time at the worksite or for units of production, costs include time for transportation, hiking, filling out timesheets, training, filling water bottles, and sending someone to the truck because they forgot their hard hat.

21.6.7. Other Considerations

As with most crews, the attitude of the crew leader has a huge effect on motivation and work ethic. Sometimes one or two individuals can negatively affect the morale of an entire crew. A good crew leader will quickly identify this problem and with the support of the trail supervisor, correct the problem before it affects the crew. Led properly, in-house crews are among the most motivated and productive. Because these crews are in-house, there is more control over training and supervision, as well as quality and quantity of work.

21.7. **Youth Crews and the California Conservation Corps**

Youth corps include public agencies, such as the California Conservation Corps (CCC), or non-profit organizations, such as the Youth Conservation Corps (YCC), Student Conservation Association (SCA), or American Conservation Experience (ACE). These workforces usually consist of young adults available for work on a contract basis. The YCC recruits high school-aged youth. SCA has a variety of programs for both high school- and college-aged students. ACE employs college-aged students. Given their availability and long experience of working with the Department, this handbook will focus on the CCC.

Youth corps are valuable programs that expose young people to working outdoors. They teach youth about conservation ethics and help build confidence by challenging both body and mind. Given their young age and inexperience, high school-aged workers tend to be less physically capable, have very limited skills and knowledge, and cannot operate power tools. Therefore, the types of trail projects that are appropriate for this labor source are limited and often result in the highest cost per unit of trail work produced. College-aged students are physically mature and can withstand the rigors of trail work. They also can operate power tools, which improves their productivity and versatility.

21.7.1. Supervision

CCC crews require a similar amount of supervision and support as inmate crews. Agency sponsors should plan on having a project leader on-site every day with the crew. CCC crews have an assigned C1, whose role is similar to that of the inmate crew's fire captain. However, the focus of the C1 is on crew member development, including developing a good work ethic, team work, natural resource values, basic hand tool and power equipment skills, and good citizenship. C1s vary in their experience, skills, and knowledge of trail work. Some are highly skilled and knowledgeable, while others have almost no experience. In addition to experience,

their ability to manage and supervise a crew also varies. A good C1 is a real asset to a trail project. Most C1s are willing, even eager, to accept training. Like with any crew, performance of a CCC crew is directly related to the quality of the C1.

21.7.2. Skills, Knowledge, and Training

CCC crews are given basic training in the use of many trail construction hand tools. They are trained to work as a crew, and usually work as a cohesive unit on a project. The turnover rate in most CCC crews is relatively high and new crew members are added frequently, which can affect crew performance and reduce the return on investment in training.

As a department, the CCC supports training for its crews and C1s. Trail construction is one of the skills they try to build in their C1s and crew members. Providing training to the crew increases their skills, motivation, and production. Training a crew often results in a positive outcome and return on investment. CCC crews are an excellent source for recruitment of future Department trail crew members and leaders.

Some CCC crew members are authorized to operate power tools via certification by the CCC. Certification must be authorized by the C1. The degree of skill that crew members have with power equipment varies, but with proper training they can become proficient with most powered hand tools used in trail construction. In addition, they are often able to operate certain kinds of mechanized trail equipment, such as power carriers, plate compactors, and gas powered drills.

21.7.3. Backcountry Crews

The CCC has the Backcountry Trails Program, which supplies a variety of government agencies with trail crews during the summer months. The members of these crews are selected from the CCC centers around the state and are among the best corps members in the CCC. They also hire crew members in conjunction with the AmeriCorps Program. Yet, the level of trail construction skills and knowledge of a backcountry crew varies. With some crews, the knowledge is fairly good. C1s are trail-oriented and have worked on trail crews for several years prior to becoming a supervisor. Generally, the knowledge of trail construction is higher with a backcountry crew than with other CCC crews. Perhaps the best attribute of a backcountry crew is that the crew knows how to work hard and endure difficult working conditions. The CCC Backcountry Trails Program has arguably produced more trail professionals than any program in the country.

21.7.4. Physical Ability

CCC crews do not have the same mandated physical fitness standards as inmate fire crews. Not all crew members are in peak physical condition, but, like an in-house crew, they will quickly develop the level of conditioning required for the project.

21.7.5. Safety

The safety of a crew is the responsibility of the C1. As a separate department, the CCC has their own Injury and Illness Prevention Program to address basic safety issues. Special safety concerns are covered collaboratively with the sponsoring agency.

21.7.6. Availability

The CCC enters into contracts with sponsoring agencies for the use of their crews. Depending on the demand, crews may need to be scheduled six months to a year in advance of the project start date. However, sometimes a small project can be fit into a gap between other projects with short notice. CCC crews have short to moderate length workdays, depending on transportation time. Spike camps can offset the short workday. In appropriate locations, CCC crews can set-up a spike camp to enable the crew to work longer days.

21.7.7. Cost

CCC crews cost more than inmate and in-house crews. Depending on the contract, CCC crews are paid based on an hourly rate (reimbursed for every crew hour spent on a project) or production rate (fixed reimbursement rate based on units of trail work completed). Contracting with the CCC on an hourly rate is an open-ended contract that can result in the sponsor paying more for trail work than a production rate contract.

21.7.8. Other Considerations

The work ethic of a CCC crew can be highly variable depending on the culture of the CCC center from which it originates and the C1 who supervises it. Some CCC centers and C1s consistently produce excellent crews. A committed sponsor can improve crew morale and productivity, but the center and C1 make the biggest difference in the performance of the crew.

Appropriate projects for CCC crews are the same as for inmate crews. Since CCC crews tend to be more receptive to training, projects that require a high level of skill tend to progress more smoothly with a CCC crew than with an inmate crew. Because a CCC crew is part of a larger center with multiple crews, projects that require a tremendous effort, such as aggregate surfacing, can be spread across multiple crews. Multiple crews can team up for a short period of time to avoid the burn-out that comes from long, strenuous projects. Centers also have the flexibility to modify the makeup of crews and bring in experienced workers to fit a particular aspect of a project.

There are advantages and disadvantages to working with CCC crews. If funding is available, they can represent a sound investment, socially as well as financially. The value of the CCC is not just the work they produce but the positive effect it can have

on young adults. For many crew members, the CCC is a positive turning point in their lives. However, the quality of CCC crews is highly variable and largely dependent on the crew's center of origin and quality of C1 supervision. Before contracting with the CCC, it is important to know the past performance of the center and the C1 that will be assigned to the project.

21.8. Contractors

Numerous private contractors are available for trail construction projects. The key to success with a private contractor is writing an effective contract and providing daily project oversight and inspection. (See Chapter 2, *Trail System Development and Management*, and Appendix F, *Contracting*.)

21.8.1. Cost

California contracting law requires that State agencies pay private sector contractors the prevailing wage for the county in which the project is located. Employees of a private contractor are paid two to three times more than other workforces discussed herein. For this reason, a private contractor may not be the most cost effective option for projects that require a lot of hand labor, have difficult logistics (e.g., hiking time), or the potential for unforeseen project conditions. Besides paying the prevailing wage, private contractors must also post a performance bond, carry liability and worker's compensation insurance, charge for tool and equipment amortization, and make a profit. As a result, contractors typically rely on the use of mechanized equipment and small trail crews to reduce labor costs. Projects that lend themselves to this approach may be good candidates for private contracting.

21.8.2. Supervision

Unlike other workforces discussed herein, the sponsoring agency does not provide staff to direct the day-to-day activities of private contractors. Make certain that the contract includes all necessary work, project specifications, and a timeline. To ensure that tasks are performed correctly and on time, the agency sponsor should appoint a knowledgeable and trained representative to routinely inspect and monitor the contractor's work, answer questions, clarify project plans and specifications, and ensure communication between the contractor and the sponsor. See Appendix F, *Contracting*, for further information on contract administration.

21.8.3. Skills, Knowledge, and Training

A private contractor is similar to other workforces discussed herein in that the trail construction skills and knowledge can be highly variable. Some contractors possess exceptional knowledge and skill while others have very little. In addition to knowledge and skill, contractors must be adept at project management since the coordination of labor, tools, equipment, and materials falls completely on them. When evaluating and awarding a trail construction contract, it is important to thoroughly check the contractor's past performance including compliance with

contract specifications, quality of workmanship, relationship with construction inspectors, and project completion on time without excessive change orders. See Appendix F, *Contracting*, for further information on contracting with the private sector.

21.9. Crew Conduct

21.9.1. Uniforms and Image

All crews, regardless of the source, must have a professional image. Being dirty, smelly, and sweaty at the end of the day is a mark of honor among hard working trail crews. Being dirty and smelly at the beginning of the day is inexcusable. Some trail workers purposely avoid bathing and wearing proper safety gear, and, instead, intentionally wear worn and ragged clothing. This behavior is not only unprofessional, it reflects poorly on the crew member and the organization he or she represents.

Trail work thrashes clothing more than most jobs. Pants and shirts will become torn and stained. Replacing uniforms can become costly, so it may not be possible to always have a uniform that meets agency standards. Working in the backcountry on an extended spike also makes it difficult to keep appearances up to standard. However, uniforms can be washed, sewn, or replaced as feasible at camp or when the crew comes off a spike.

21.9.2. Latrines

A common issue on trail projects is sanitation. In many locations, it is not feasible to provide sanitary facilities at the worksite. Crews should take advantage of trailhead facilities before hiking out to the worksite. Portable toilets can be hauled to the trailhead if there is room for the vendor's vehicle to unload and service the toilets and a place to locate the toilets out of vehicle or user traffic. If a toilet is not available within easy walking distance of the worksite, crew members can carry a mobile toilet (a bucket lined with a plastic bag) or a plastic bag (WAB BAG) for defecating, or follow backcountry protocol (e.g., dig a "cat hole").

Crew members should never defecate or urinate within 200 feet of a water source, trail, or campsite. All feces must be buried in a hole that is a minimum of 6 to 8 inches deep and 6 to 8 inches wide into top soil. Feces are buried with soil excavated from the hole and organic material (duff) is spread on the surface. If the site lacks adequate topsoil depth, the "cat hole" method should not be used.

For a fast moving project such as brushing or new tread construction, backcountry protocol may be the only viable option. Backcountry protocol should be used only when a mobile toilet facility is not practical. When working in a small area for an extended period of time, such as on a complex bridge project, a mobile toilet is most appropriate.

21.9.3. Trash

Litter on a project is inexcusable. The only way for litter, including food waste such as orange peels and apple cores, to arrive on a trail project is via the crew. The crew must remove their trash. Nothing looks worse to the public or park managers than a site strewn with garbage. Trash is packed out, not stashed or buried. Even if garbage and food are carried out each day, they should not be left unattended in camp or at the worksite for any period of time. They can attract bears, corvids, and other wildlife. If animals gain access to garbage, significant resource management and public safety issues can develop. Crews must keep food and trash within sight or stored in appropriate containers.

21.9.4. Smoking

Smoking on the worksite may be prohibited due to wildfire or other resource management concerns. Before allowing crew members to smoke on the grade (worksite) or in camp, check with appropriate staff to determine if smoking is allowed or appropriate. If allowed, rules for smoking must be established and followed. These rules may include that smoking on the grade may only occur during breaks or lunch. Smoking in camp may be allowed only in a designated smoking area. The designated smoking area must be in a location free of material that could be accidentally ignited and downwind from the non-smoking crew members. Cigarette smokers must not litter used butts and matches. If smoking is allowed, butts should be packed out by the smoker with other crew garbage. It is a good idea to bring a small container with a tightly fitting lid to store cigarette butts until they can be properly disposed in an appropriate trash receptacles.

21.9.5. Dealing with the Public

Even when working in an area closed to the public, crews will likely encounter the public and must project a professional image. Being dirty and sweaty after working is acceptable, but loud and vulgar language is not. Crews should be friendly to the public; they are the reason the trails are built. Engage the public politely and answer questions. (Note, for this reason, it is wise to learn about the project area.) Treat the public well and advise them of any dangers or risks. In an area legally closed by a closure order, crew members should advise hikers of the closure and the reason for it, but not challenge or argue with them. If necessary, advise law enforcement. Crew members should be prepared to escort hikers through a dangerous work area, and halt all dangerous activity until the public has left the area.

21.9.6. Natural and Cultural Resources

Trails are park facilities similar to restrooms, campsites, parking lots, and roads. They provide access to the natural, cultural, and scenic resources of a park and enhance the visitor's enjoyment. However, the natural and cultural resources of a park take precedence over trail facilities. Every decision regarding design, layout, and construction of a trail is based first on what is best for the park's resources.

Sensitive, rare, or endangered natural and cultural resources should never be jeopardized by a trail facility.

The mere presence of a trail crew can have disruptive effects on natural and cultural resources. These impacts are detailed in the resource documents related to the project, and every effort must be made to minimize them. A trail crew can be the largest, most focused human occupation that has ever occurred or will ever occur in the worksite. Be certain the crew, regardless of the source, is advised and respectful of any resource concerns. In addition to proper management of trash and sanitation, the crew must stay on the trail alignment unless going off the trail as part of an assignment. Train the crew to recognize and avoid rare or threatened plants. The crew must recognize indications of cultural sites (e.g., dark earth and shell fragments, or cans, bottles, or other historical cultural artifacts), halt excavation when these are encountered, and consult the appropriate park cultural resources staff before proceeding.