

The Effects Pathway: Describing the Action

Deconstruct It!

A Planner's Best Friend:
The Gantt Chart

5 Steps to Describing Your Action

The Action Area

Organizing Tips

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DESCRIPTION OF THE ACTION

PHOTO: JANICE ENGLE, USFWS



A common and complete understanding of the proposed action by the Section 7 partners is essential to successful consultation. The description must contain sufficient detail to identify all aspects of the action that have the potential to result in environmental consequences. The Services (FWS and/or NOAA) should work jointly with Action Agencies to accurately identify the Action.

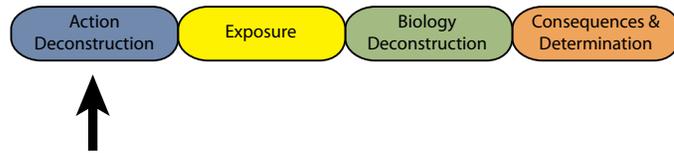
WHAT DO YOU MEAN I HAVE TO “DECONSTRUCT” IT?

All elements of the Action that are relevant to the consultation should be identified. This is referred to as “deconstructing” the Action into its component parts, where each individual aspect of the action is identified along with the steps required to complete it. For example, a timber harvest action may include road construction, stream crossings, tree removal, brush clearing and burning, and pesticide application. Because each of these activities has the potential to affect listed resources in different ways, we break them down all the way to the point where we identify the sub-activity or component that results in a change to resources. For example, road construction can further be broken down into vegetation removal by various methods (grading, controlled burn, etc.), grading, placing fill and base, paving, striping, etc.



PHOTO: DON TOLLEFSON, USFWS

The Effects Pathway



Completing a good action description is the key to a good BA...this is the first part of the Effects Pathway, and if activities are not included here, they will be missed as you work through your analysis.

A useful approach for solving complex problems can be to break them into components, solve each component individually, and then reassemble the results.

By identifying the individual activities that make up the proposed action, you can ensure that the effects (which will be discussed later in this document) of each are fully accounted for.

Many projects are complex, making it difficult to ensure that all of the potential effects to a species (both positive and negative) are considered. Because of this, it is important to “deconstruct” projects, that is, break them down into their component parts. Breaking projects down allows you to more thoroughly assess which parts are likely to produce stressors that may result in effects to species and then develop appropriate conservation measures.

When deconstructing the action, it is strongly advised that you work with an industry expert. This can help ensure that all aspects of a project are identified. It can also help you gain an understanding not only of what activities are likely to occur, but how those activities might be conducted. This is important because different methods may have dramatically different effects (e.g. timber extraction via cable, skidder, or helicopter.)

HOW DO I START?

Start by thinking about the sequence of events that are required to make this project happen ... WHEN will the different activities occur?

When a project begins and ends has a lot to do with the timeframe in which effects occur. When are the individual actions going to actually start and stop?

What are all the steps? Do things happen in specific phases? For example, site preparation, construction activities, and post construction restoration are all very different phases of the project, and all happen in a specific order. Phases of projects often result in very different effects over different time scales.

Interestingly enough, the phases don't necessarily occur in a sequential, organized manner. There are often time period overlaps or gaps through the lifespan of a project. Identifying them up front is important to ensure that exposure is "captured" in your analysis.

Will there be a "forever" operations and maintenance phase? Work that in. If you don't include operations and maintenance now, you may have to include it in a separate consultation later.

Effects of construction projects often go beyond the actual construction. For instance, a new bridge's existence after the construction is completed can have effects on stream flow, bird migration, and stream pollution from runoff.

You should consider all of this when beginning your deconstruction.



PHOTO: DOUG CANFIELD, USFWS

GANTT CHARTS – A PLANNER’S BEST FRIEND

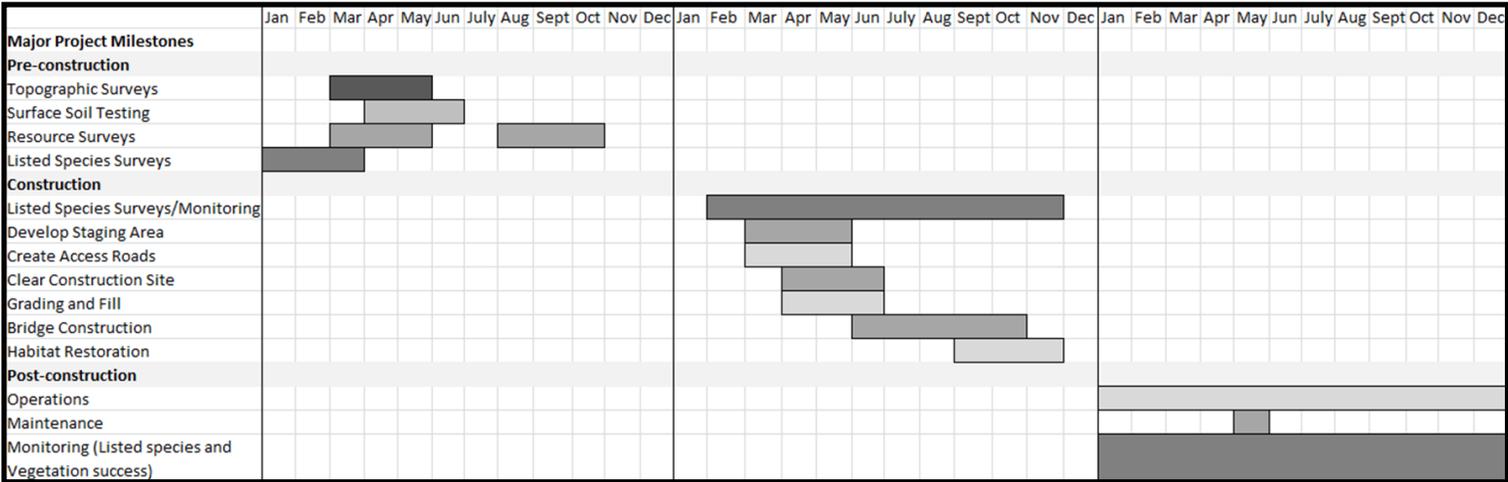
A Gantt chart lays out the timelines of the project activities.

Many transportation planners rely on Gantt charts for project development. They are an excellent tool to use to help you DECONSTRUCT the project. You lay out the major activities on the timeline so you see where there are overlaps and gaps. In addition, you can also lay them on the same chart as the species’ activities (breeding, feeding, migration, etc.) to better understand how the biology and behavior of the species during different times of the year may be impacted by various actions from project development.



PHOTO: JANICE ENGLE, USFWS

Here is an example of a Gantt chart:



If you want to learn more about GANTT charts – check out the webpage <http://www.gantt.com/> where you can learn all about them and even watch a video that shows how to create one.

DESCRIBING THE ACTION

STEP 1 - HOLD COLLABORATION AND COORDINATION MEETINGS

Collaborative in nature, and supported by site visits and maps, early coordination meetings provide opportunities to jointly understand the proposed action. These meetings should be focused toward clarifying objectives of each team member, identifying challenges, and determining the means for resolution.



PHOTO: JANICE ENGLE, USFWS

A stressor is any physical, chemical, or biological alteration of resources (i.e., increase, decrease, or introduction) that can induce an adverse organism response.

Stressors can act directly on an individual, or indirectly through impacts to resources.

More information about stressors is available in the publication on Exposure which is available separately.

STEP 2 - IDENTIFY THE ACTIVITIES THAT START YOUR DECONSTRUCTION

To begin an action deconstruction, identify the various **Activities** or phases that make up that project. **Activities** are a set of tasks that would be logical for a single work crew to complete. These may be considered mini projects unto themselves. For example, a “Timber Extraction” may have the **Activity** of “Road Building” associated with it (which can itself have various components that need to be identified – these are addressed later). Each of the **Activities** is likely to have its own set of stressors associated with it.

If the action being deconstructed is reasonably simple, it may involve only one or a few easily identifiable **Activities**.

If the project is complex, it may involve many **Activities**. In these cases, identifying all of the **Activities** associated with the project can be difficult. There are an unlimited number of ways to deconstruct a project, so do what works for you. Start by asking yourself “What is the most logical way to break this project down so that I am able to identify all possible effects?”

Activities associated with construction of a building may include constructing a road to the facility, clearing habitat on the building site, developing staging and fuel storage areas, implementing stream crossings, etc. Each of these aspects of the project could have different potential impacts.



PHOTO: JANICE ENGLE, USFWS

When we deconstruct the action, we need to identify all elements that may somehow affect listed species and designated critical habitat. These include elements that may **adversely affect** listed species and designated critical habitat, those that may **benefit** listed species and designated critical habitat, and those elements that will occur, but that will clearly **not affect** listed species and designated critical habitat.

PHOTO: JANICE ENGLE, USFWS



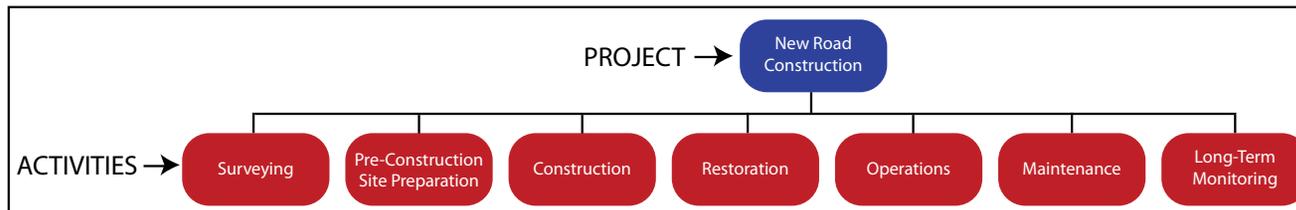
Now it's time to put your pencil to paper.

First, briefly identify your proposed action. Is it a development project, a bridge replacement, a water diversion? Just what is it?

Write it down – this is your “PROJECT”.

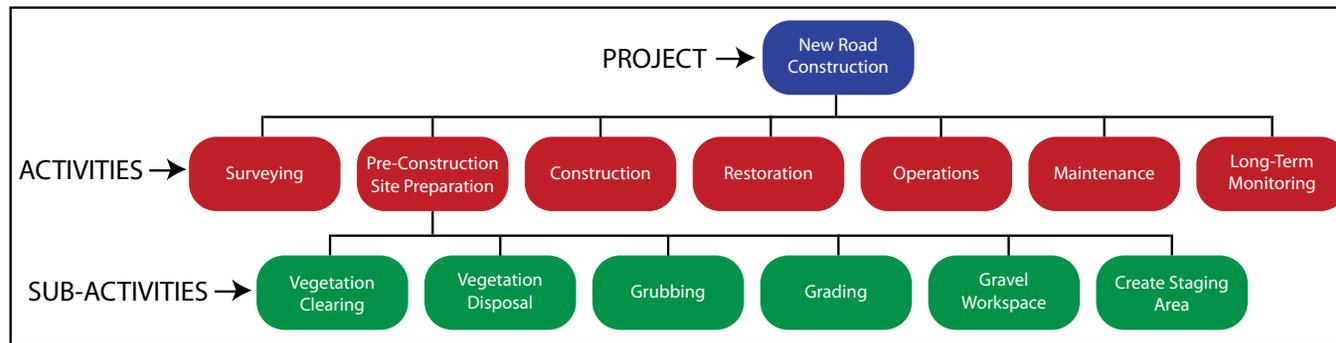
Next, list the major phases (activities) of the project (if applicable). Many projects can be broken down sequentially. Walk through the project from beginning to end. What happens first, second, etc.? Are there any **Activities** that occur simultaneously? If so, make sure you document all of them. These are some of the more typical phases you may have in your project:

- » Surveying
- » Pre-Construction Site Preparation
- » Construction
- » Restoration
- » Operations
- » Maintenance
- » Long-Term Monitoring



STEP 3 - BREAK INTO SUB-ACTIVITIES

Break those phases (activities) into sub-activities that could occur. You can see from this example some of the sub-activities that would be appropriate for the pre-construction site preparation:



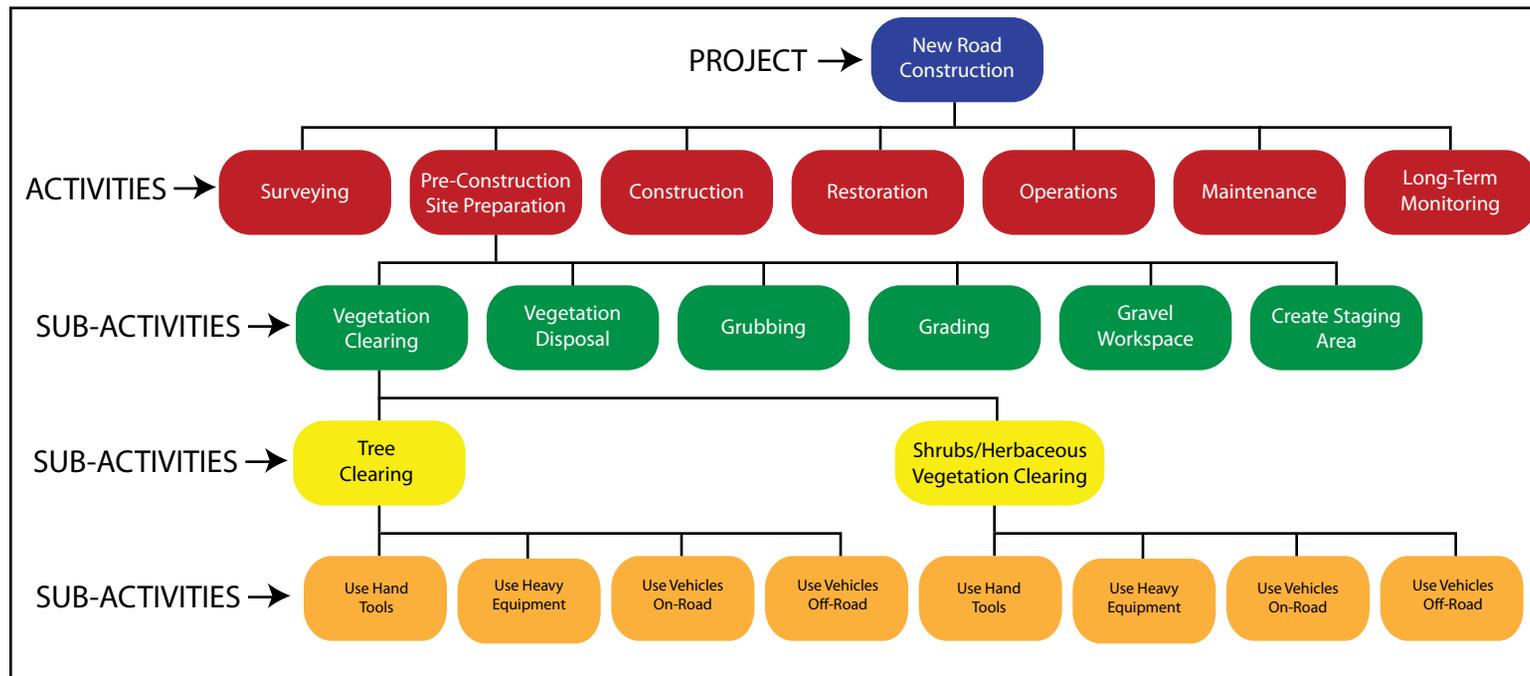
STEP 4 - FURTHER BREAK DOWN THE SUB-ACTIVITIES

These sub-activities can sometimes be broken down even further. For instance, vegetation clearing doesn't give enough information to do your deconstruction. There is a big difference to the resource(s) if being done with a weedeater or a bulldozer. This further breakdown is necessary to determine the stressors that could result.

The image on the next page shows what your further deconstruction could look like for vegetation clearing:



PHOTO: USFWS IMAGE LIBRARY



How Low Do You Go?



If your Sub-Activities are not going to result in stressors and/or if you feel that you have considered all the potential effects -- STOP.

Break these Sub-Activities down until you no longer feel it is necessary to see the effects. You need to go as deep as you need to go, but think about the law of diminishing returns and stop when you don't really need to go any further.

You are NOT restricted into keeping your deconstruction into 3 or 4 levels of refinement.

STEP 5 - IDENTIFY NEW PHYSICAL FEATURES

Identify any new physical features that will be present in the landscape due to project activities. In BA terms, these are called structures.

For example, there is a new bridge because of the construction activity. Maybe there is a spoils pile left in a staging area or a gravel pad in an area that was once vegetated. These structures could result in stressors that will need to be analyzed. A fence that is on site during construction can be used as a perch by predators that may hunt for the listed species. Important information to consider.

Here is an small segment of a deconstruction table.

Road Construction Example	
I.	Topographic Survey of Project Site
1.	Use Vehicles Off-Road
2.	Place Geomarkers
3.	Conduct Theodilite/GPS Survey
4.	Prepare the Project Site
A.	Remove Vegetation
1.	Cutting Vegetation
2.	Stockpile Vegetation
3.	Dispose of Vegetation
a.	Burn Vegetation Onsite
b.	Redistribute Vegetation Onsite
c.	Haul Vegetation Offsite
1.	Use of Disposal Areas (terrestrial)
4.	Use Heavy Equipment
B.	Remove Rock and Rock out Crops

The entire table is available by clicking on the link below. This one specifies, after each entry, whether it is an “activity” or “structure”.

[LINK TO ROAD CONSTRUCTION EXAMPLE](#)

To see another detailed deconstruction that also goes down to the sub-activity level and includes structures, check out the “Wind Energy Deconstruction” example provided here.

[LINK TO WIND ENERGY EXAMPLE](#)

We’re not saying that you always need to go into this much detail, but if it is going to have a potential impact on a listed species, the deeper you go, the more effective your BA is going to be.



PHOTO: JANICE ENGLE, USFWS



PHOTO: JOSHUA WINCHELL, USFWS

HINT: When you find good examples of a deconstruction that include activities that may apply to your future projects, save them. Many different types of projects include activities like access road construction, staging areas, vegetation clearing, etc. Even though every part of the deconstruction may not apply to your current project – there is no reason to have to reinvent the wheel every time. Create a “bank” of activities you have deconstructed for future reference.

HELPFUL DECONSTRUCTION HINTS

As you work through your deconstruction, it is easy to remember the construction sub-activities, but don't forget to include these parts of your action also!



Present and Future Maintenance

- » When will maintenance be done?
- » How often?
- » Will you do it within certain parameters and/or species constraints?

Monitoring

- » Monitoring of habitat effects (Are there additional effects from the monitoring protocol?)
- » Monitoring of effects to individuals

Avoidance, Minimization, and Mitigation Measures

- » Seasonal work windows
- » Avoid habitat
- » Avoid ALTERING habitat
- » Avoid arresting habitat development
- » Avoid individuals of the species
- » Restoration (simple multi-step work; restoration projects may also required deconstruction)
- » Set-aside areas/protected habitat
- » Off-site compensation/habitat acquisition
- » Conservation Banks

Some of these may not be obvious until after you have worked your way across the effects pathway. That's OK! It is not a straight line from start to finish in a BA, and you may realize after you have worked on your effects analysis that you can reduce or avoid some effects by adding a few more Best Management Practices/ Conservation Measures (BMP/CM), which, don't forget, are a part of the action you are proposing to implement.



GETTING IT ALL TOGETHER

So you have done all of the breaking down you need to do. You have considered a number of different things and in the end; you have a ton of information. What do you do with it?

We recommend that you go ahead and transfer all your content to a single electronic document. The link on the left is to a Microsoft Word template that you can use.

Remember, the key thing is to get all of your deconstruction information together in one place because it will make things easier as you continue this process.

THE ACTION AREA

Once the Action is clearly identified and “deconstructed” this information can be used to assess the extent of the effects of the action to determine the appropriate Action Area. It is determined in large part by the geographic scope, location of the project, and extent of project effects. Action area means all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action (50 CFR §402.02).

Action Area -
the area to be
affected directly
or indirectly by the
proposed action
and not merely the
immediate area
involved in the
action.

Your action area includes effects of interrelated and interdependent actions (actions that would not occur BUT FOR the action you are proposing), including any conservation measures, and therefore is intimately linked to the effects of the proposed action (which will be covered in detail later in the “Effects” section).

It is defined by the boundaries of all the effects of all aspects of the proposed action and deconstructing the action helps you determine “all aspects”. You want to describe all parts of the project geographically, where the loading areas, staging areas, and temporary bypasses will be – all parts of the project including those that might not be right at the “footprint” e.g., where the bridge is being built. Think about the ancillary facilities needed for project completion, as well as the extent of the stressors produced (e.g. noise, lights, and vibrations, etc.). How far downstream will that sediment plume extend? Will construction trucks raise dust on gravel roads near listed plant populations? Will helicopters travel near nest trees of listed birds?



PHOTO: JANICE ENGLE, USFWS

You also want to include where your mitigation or conservation measures will be implemented, because they are part of the action and action area.

At times this may result in an iterative evolution of the Action Area during BA Development, as additional effects that have a greater “reach” come to light, or as conservation measures (or BMPs) REDUCE the extent of effects, thus reducing the Action Area. So, the point here is, don’t obsess over your action area at this point. Do your best to come up with what you think is accurate and be aware that as the analysis continues, it will likely change somewhat.

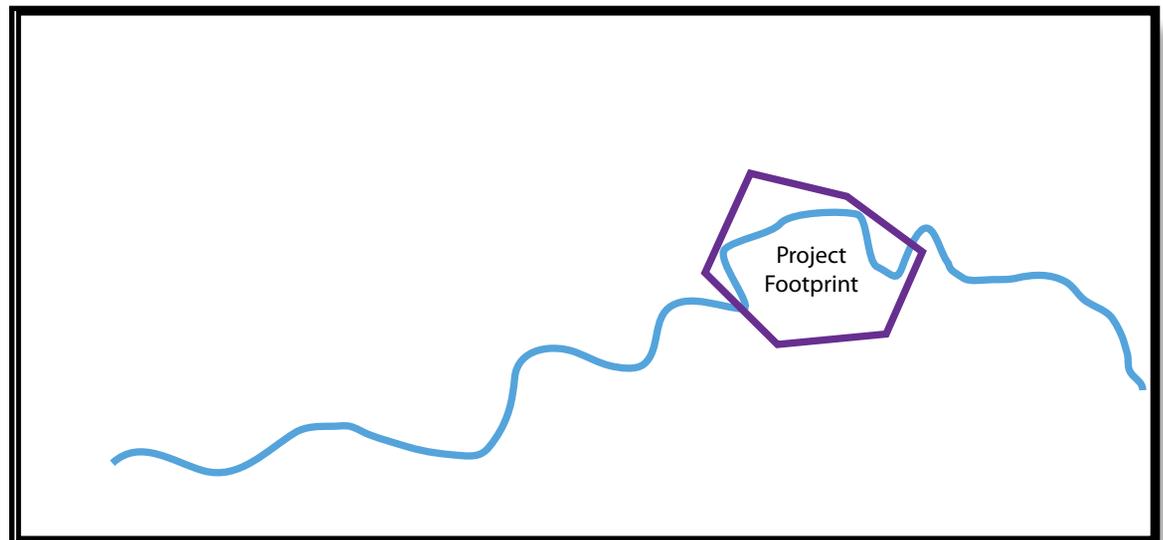
Conflicts can arise when the action agency and the Services do not view or think of the action area in the same way. If you describe it inadequately, the Services would either modify the action area in their response document (concurrence letter or Biological Opinion) or explain that the action area was inadequate in a non-concurrence or insufficiency letter. And if you don't describe it at all, then the Services will.

Early coordination can help all players to understand the geographic scope and considerations involved in determining the action area. Remember, you should have already been coordinating with the Services, and the action area is included in the Description of the Action section of the Biological Assessment.

IDENTIFYING THE ACTION AREA

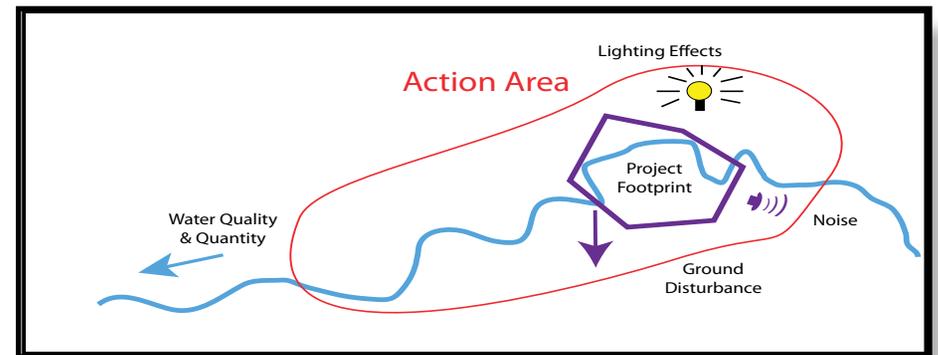
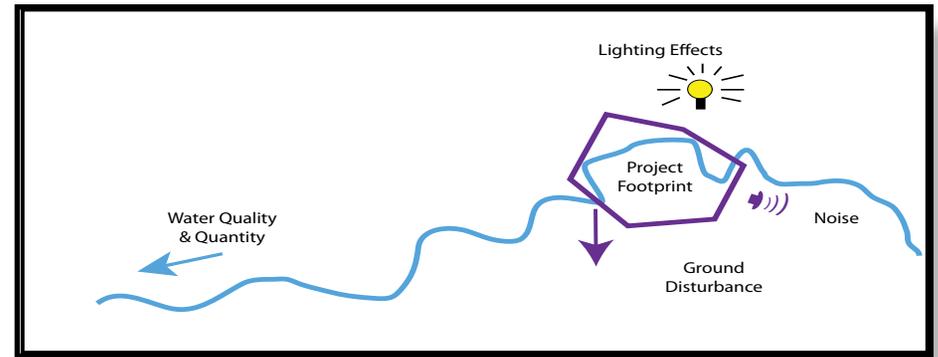
So, in describing the action area, write about the geographic context of the project – what's being proposed within its readily apparent boundaries – the project site.

1. Begin with the actual "footprint" of the action



2. Include all areas that will be affected directly or indirectly by the proposed action – NOT merely the immediate area involved in the action. Follow direct & indirect effects out from the footprint until they cannot be meaningfully measured/described, and/or muddied by other sources of effects.
3. Then follow the action's physical, chemical, and biotic stressors across land, air, and water, over time. Include direct and indirect pathways.
4. Identify the spatial and temporal distribution of the stressors.

The resulting polygon defines the action area. Mapping out all the effects is a great way to ensure that everyone can see and understand the reasoning behind “the action area.”



You have identified all of the components of the action, you've given some thought about what stressors could be caused by each of the components, and you've identified when they're going to occur and where they're going to occur. From this, you can identify the action area.

For a construction project, the Action Area generally begins with the actual "footprint" or project site, plus the access routes, and whatever construction there is that leads to the "footprint."

A dam would have the dam site itself, borrow areas, roads, staging areas, maintenance sheds, offices, and other ancillary facilities necessary for construction, as well as all water up-and downstream that now has a change in velocity.

If your project is non-construction, such as a planning area or a grazing allotment, start within the boundaries of the planning area, timber sale unit, or grazing allotment.

ACTION AREA FORMULA

This short video will show you how to calculate your action area. Just click on the image and a video window will open up.



FOLLOW THE EFFECTS: SOME ACTION AREA EXAMPLES

Water diversion from the Lower Colorado River to Los Angeles. You can readily describe the dam and diversion and canal to Los Angeles, but when the water is mixed with water from other sources in a reservoir, you can no longer follow the effects.

A power transmission line maintenance project occurring 100 mi from the actual power plant but within the migratory corridor of whooping cranes can impact the cranes. When it connects to a grid, the electricity gets mixed to the point the effects can no longer be followed.

A dam on the Platte River in Colorado (the project site) also may affect the water regime for whooping crane critical habitat (action area) 150 miles downstream in Nebraska.

There will always be exceptions to each scenario.

You need to look at the specifics of each project and identify any new variables, if any.



SO WHAT IS GONNA HAPPEN WITH ALL THIS STUFF?

Eventually you will be writing the description of the action based upon the framework provided by your deconstruction. The deconstruction itself can be included as an appendix to your BA or you can include the entire effects pathway as an appendix since your deconstruction will be an important part of that.

You will want to make sure your Description of the Action in your Biological Assessment includes the following items:

- Maps of the project footprint, action area, including associated areas (e.g., staging areas, borrow sites, etc.), and access roads
- A complete description of all aspects of the proposed project, including
 - » Avoidance BMPs
 - » Minimization BMPs
 - » Mitigation BMPs
- A monitoring plan, including reporting format and due dates
- Long-term maintenance activities

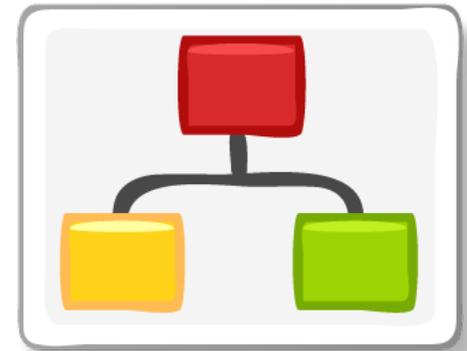


PHOTO: RYAN HAGERTY, USFWS

THREE METHODS TO ORGANIZE YOUR DECONSTRUCTION

THE TREE DIAGRAM

Diagrams can be especially helpful with complex projects. Diagrams are useful for visualizing and communicating all of the steps involved in a project, and for clearly documenting how a particular job is done. In addition, the act of diagramming the project can help you clarify your understanding of the project and, by conveying the project in a step-by-step flow, you can focus on each individual step, without feeling overwhelmed by the bigger picture. Photos and illustrations may also provide some of the same benefits.



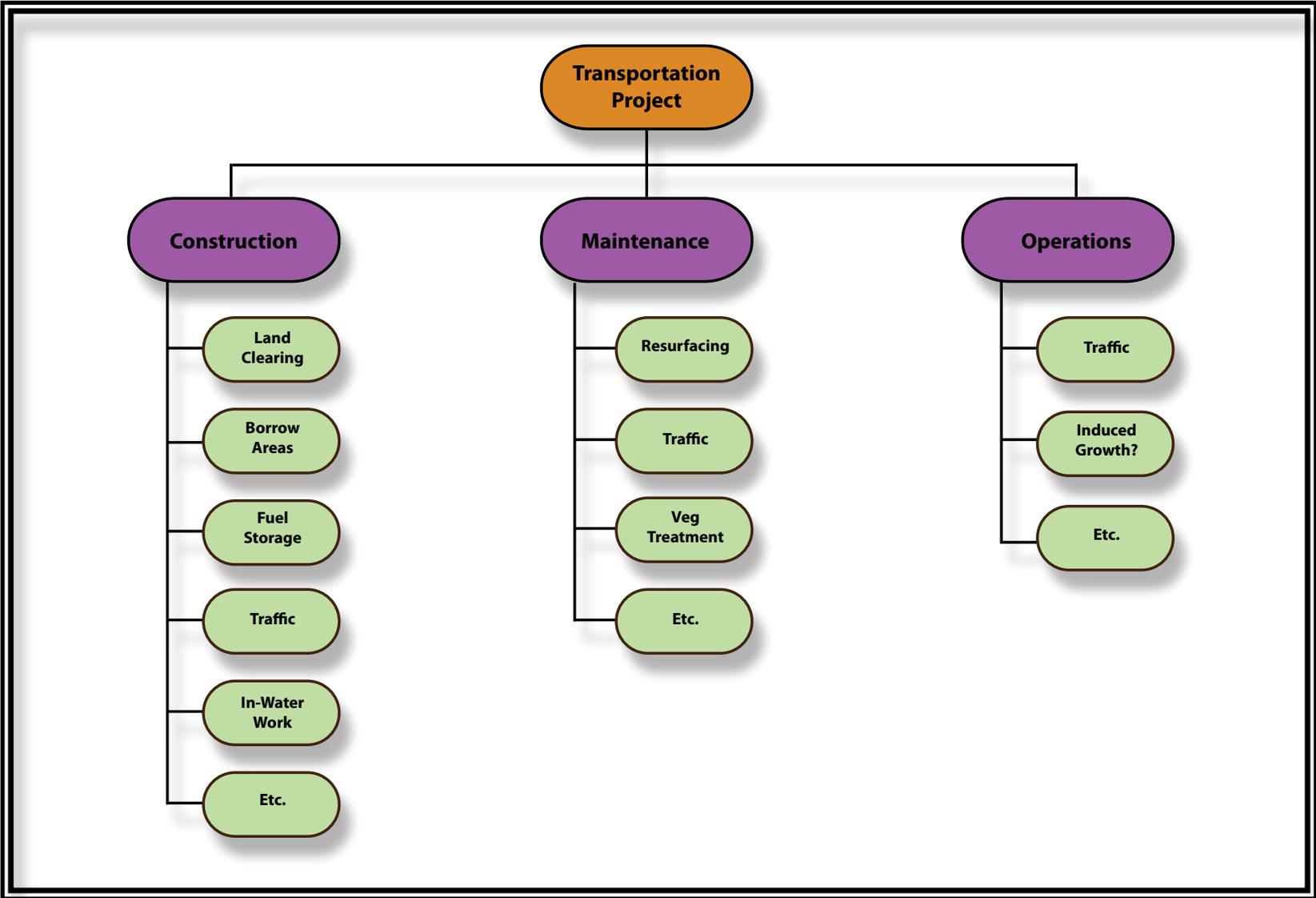
This is essentially the process that was followed earlier when describing Step 2 in the Deconstruction process.

For a simple transportation project, you'd first break it down into the primary activities; **Construction, Maintenance, and Operations**.

Then you'd further break down each of these activities into subactivities, each of which may have different effects on listed species and designated critical habitat.

By looking at each element individually you can more easily get a handle on potential effects.

Here is an example of a basic transportation project.



THE OUTLINE VIEW

Another method for documenting your **Project** deconstruction that can be useful is the outline view.

This view is a bit more difficult to digest than the tree diagram, however you can easily make changes, especially since the Microsoft Word auto numbering feature updates the numbering automatically.

1. Development
 - 1.1. Residential Development
 - 1.1.1. Habitat Clearing
 - 1.1.1.1. Tree Removal
 - 1.1.1.1.1. Chainsaw
 - 1.1.1.1.2. Large equipment
 - 1.1.1.2. Slash Piling
 - 1.1.1.3. Slash Burning
 - 1.1.2. Road Construction
 - 1.1.2.1. Grading
 - 1.1.2.2. Bridge Construction
 - 1.1.2.3. Paving
 - 1.1.3. Site Grading
 - 1.1.3.1. ... 1.1.3.n.
 - 1.1.4. Excavation
 - 1.1.4.1. ... 1.1.4.n.
 - 1.1.5. House Construction
 - 1.1.5.1. ... 1.1.5.n.
 - 1.1.6. Occupation
 - 1.1.6.1. ... 1.1.6.n.



PHOTO: USFWS IMAGE LIBRARY

TABULAR VIEW

The tabular view may be a good compromise if the tree diagram requires too much effort and the Outline diagram is too difficult to interpret. The numbering system is not included in this example; however, it certainly could be included.

In this tabular view, a new column was added for **Phase**. Phases can be a logical and useful way of dividing your task into manageable chunks. In addition, many industries organize their project tasks by **Phase**. Be careful not to include phases as an **Activity**. The phase does not affect the stressor produced by the activity or the recommended Conservation Measure. The next step in this example would be to break the **Activities** down into their **Subactivities**.

Here is an example of a tabular view for a Wind Energy project. The activities are organized by **Phase**.

Phase	Activities
Prospecting	Access road use
	Erect meteorological temporary (MET) towers
	Operating / maintaining MET towers
Siting and Development	Access road construction
	Access road use
	Erect temporary MET towers
	Operating and maintaining MET towers
	Survey crews
Construction / Commissioning	Access road construction
	Access road use
	Operating and maintaining MET towers
	Survey crews
	Ground clearing
	Etc.
Operations	Access road maintenance and use
	Power line operation and maintenance
	MET tower operation and maintenance
	Substation operation and maintenance
	Wind turbine operation and maintenance
Repowering	Access road use
	Access road construction
	Ground clearing
	MET tower operation and maintenance
	Disassemble old wind turbines
	Erect new wind turbines
Decommissioning	Access road use
	Disassemble wind turbines
	Remove power lines
	Remove concrete pads
	Remove roads
	Revegetate