Introduction
J. GARRETT: Welcome to the National Training Center's online training on using Producer Price Indices to extend the effective life of a mineral material appraisal. My name is Jeff Garrett, Minerals Training Coordinator here at the NTC.

The training objective for this short lesson is to train you to do the following:

Given a mineral material appraisal data, adjust the fair market value estimate of the mineral material disposal using the proper Producer Price Index. This is what you will be asked to do on the post-test for this lesson.

In order to achieve that training objective, the following enabling objectives will also need to be met. By the end of this lesson you should be able to: Access the BLS website, select the proper PPI, select the correct data in that PPI, complete PPI computations, and adjust the contract price. Now that you know what the goal and objectives of the training are, keep this in mind as we go through the training.

The public land statistics for 2007 show that the BLM initiated new mineral material disposals in the amount of 50 million cubic yards of material with a value of $60 million, or an average value of $1.20 per cubic yard. For the same year, production from BLM administered lands was 15,500,000 cubic yards, valued at $16,400,000, or an average value of $1.05 per cubic yard.

So we can see that the Bureau-wide there is a lot of money involved in the mineral materials program. If we look at, say, just a 2 cent adjustment to the fair market value just on the production for, say, 2007, it would result in a quarter of a million dollar increase in revenue. So year-to-year adjustments can make a difference.

Now that you know how important it is to determine fair market value, let's take a look at what we will be covering. During this lesson, I will first go over some PPI background information. Then I'm going to talk about the BLS website. Next I'm going to talk a little bit about the index structures in the PPI. And then I'm going to go over some examples on how to determine the fair market value. Finally, I'm going to provide you with an opportunity to practice on your own with some exercises, and then we will review those exercises.

Now that you know what we will be covering, let's begin by going over some background information.

Background Information
Regulations under 43 CFR 3600 require that mineral materials not be sold at less than fair market value as determined by appraisal. The mineral material appraisal handbook states that: An appraisal is conducted to determine the fair market value of the material. Appraisals must be updated as the market changes and at intervals of not less than two years. Because appraisals can be time consuming and expensive, the BLM has in the past used the PPI to update fair market value determinations. Instruction Memorandum 2059 last addressed the use of PPI's to extend the effective life of a mineral material appraisal. This memo expired on September 30th, 2004. The IM states the effective life of mineral material appraisals may be extended by applying appropriate price indices. Instead of conducting a new appraisal every two years, an appropriate Producer Price Index published by the U.S. Bureau of Labor Statistics would be used to adjust the estimate of a fair market value. For sales, however, such an adjustment is not recommended for more than six years from the date of the original appraisal. After six years, a new appraisal will be performed. For free use permits, price indexing may be utilized on appraisals that are more than six years old. It is the intent of the Washington Office to issue another IM to implement the policy as outlined. To help implement this policy and to help provide consistency and accuracy in use of the PPI, the National Training Center has developed this training package.
Because major price changes objectively both in general and for particular products, the Producer Price Index as calculated by the Bureau of Labor Statistics are widely recognized among business people, economist, statisticians and accountants as useful in making price adjustments.

Use of the PPI can be an effective method of coping with inflation by employing price adjustment or escalation to adjust the fair market value of sales and from use permits.

There is no single index entitled the Producer Price Index. The term "Producer Price Index" refers to a family of indices compiled by the Bureau of Labor Statistics. In short, the Producer Price Index measures average changes in prices received by domestic producers for their output.

Now that you have a little background info on the PPI, let's talk about the BLS website.

Index Structure

There is a lot of information available on the website. You can go to this URL link to access the Bureau of labor statistics website for an in-depth discussion on all aspects of the PPI.

Now let's talk about some of the information or indexes that are available on the website. The indexes are structured in a certain manner. In fact, there are three major structures, the first being the stage of processing, the second being industries and their products, and the third is the type of commodity.

In the state of processing index, products are indexed by class of buyer and degree of fabrication.

That is, finished products, intermediate goods and crude goods.

For the industries and their products index, products are organized by producing industry as designed in the North American Industry Classification System. Some examples would be manufacturing, farming and mining.

And the type of commodity index, products are organized by similarity of end use or material composition. Since we will be using the commodity index, let's look a little closer at this particular index.

They use the commodity data as this is data that indicates the value that industry would get for a commodity, i.e., the fair market value BLM obtains for mineral material versus the industry data, which is an indication of what it costs to provide that commodity. As I previously stated, the commodity classification structure of the PPI organizes products by similarity of end use or material composition regardless of whether the products are classified as primary or secondary in their industry of origin. The coding system used for these indexes is unique to the PPI program. No other governmental statistical program uses it.

The commodity classification structure includes 15 major groups. Of these, 13 major commodity groupings form the index for the industrial commodities, or the nonfood materials price index. Some examples might include raw cotton, construction sand and gravel, and iron and steel scrap.

Each major commodity grouping includes in descending order of aggregation a three-level digit subgroup, a four-digit level production class, a six-level subproduct class, and an eight-digit level individual items.

Let's look at an example of an item you might encounter. First we have the two-digit group designation, group 13, which is the nonmetallic minerals products. Next we have the three-digit subgroup 132, which is the concrete ingredients and related products. That's followed by the four-digit product class, construction sand and gravel, crushed stone. And the subproduct class, which is construction sand, gravel and crushed stone. And finally the individual item in this particular case, which is construction sand and gravel, run of pit or bank material.

For more information on these definitions and other related information, you can visit other websites. The URL's are listed here on the screen.
A couple things to keep in mind when using the PPI...

When use the PPI be sure to identify the index selected by its complete title and by identifying code. This will allow anyone reviewing your work to follow your reasoning and thought process. Because price data are used for different processes or different purposes by different groups, the BLS publishes seasonally adjusted as well as unadjusted data each month. For economic analysis of price trends, seasonally adjusted data usually are preferred because they are designed to eliminate the effect of changes that occur normally at about the same time and about the same magnitude each year. So if you live up in Alaska or down in Arizona, this may affect how you determine your adjustments.

Also note that the PPI data are published as monthly indexes and as annual averages for calendar years. The monthly producer price indexes are representative of the entire month and do not refer to a specific date of the month.

The simplest method of price adjustment is to have the base price change by the same percentage as that calculated for the selector price -- the selected Producer Price Index. To illustrate, suppose that a price index used was 110 when the fair market value for a mineral was established. Two years later when the first adjustment is made, the figure is 115.5. This represents an increase of 5% in the price index as shown. The index at the time of calculation is 115.5. You divide that by the index at the time the original fair market value is determined. This gives you a figure of 1.050. This means that the base price should be increased by 5%.

Our original fair market value or base price was $1 per cubic yard. We multiply that by 1.050 to give us an adjusted price of $1.05 per cubic yard.

When using the PPI, you should look to see if the escalation is representative of what is happening in the market where you are working and is representative of the commodity that you are adjusting. Products produced in regional markets lend themselves easily to this type of evaluation, while local markets are more problematic. For example, one state felt comfortable in using the PPI in the competitive sale for railroad ballast as the commodity had a regional market, while they were hesitant to use it for localized materials like decorative stone as individual characteristics may make some types of stone more valuable in particular areas that would not likely be reflected in PPI data.

One thing that you might consider is using the percentage of product price as a touchstone or "Whiff Test." For example, if a producer is selling rock at prices in the 15 to $17 per ton range, the material should have a fair market value price that reflects this, regardless of what the end product is called. For example, if based on previous appraisals in your area you find that retailers are paying a fair market value, or royalty, to their producers that equals, say, 8 to 10% of the retail price, this would equate to $1.20 to $1.70 per ton for $15 per ton rock. If you use PPI and come up with an adjustment that falls outside the indicated range, then you need to determine why that is the case. Now that I've reviewed the index structures used in the PPI, let me go through a couple of examples to show you how to determine the fair market value of a mineral using a commodity index.

Examples

Here is our first example. Suppose a Field Office enters into a sale of sand and gravel. The contract issuance date is December 31st, 2005, and the contract is effective for five years. The fair market value as determined by appraisal was set at 50 cents per cubic yard in-place value. December 2005 is called the reference base period. In accordance with 43 CFR 3602.12(b) the Field Office decides to adjust the contract price in January of 2008 for the material that's remaining on the contract.

Now we're going to go to the BLS website. Here we are at the Bureau of Labor Statistics website. This is found at www.bls.gov. Here we've got a Databases & Table tab. We'll click on that. It takes us to the Inflation and Prices Tables. We scroll down and we'll find the prices producer segment of
that table, and here under that we have the industry data and the commodity data. There are a series
of buttons that we can use, the top picks, one-screen data search, multi-screen data search and text
files. The website offers tutorials for those of you who need to take those to feel comfortable with the
process. For purposes of our exercise, we're going to use the commodity data, and simplistically,
we'll use the one screen.

This pulls up a Producer Price Index commodity data table. We're going to go by steps. We're
looking at step 1 and we're going to select the group. As you will recall, this was a two-digit
commodity. Looking down through this, scrolling down, we come to number 13, which is the
nonmetallic mineral products, which would best fit our needs.

Click on that. It populates the number 2 database. Here we see that we have again 13 as the top of
it. That's the group. We go down and we look for the three-digit subgroup that fits our needs. Down
here we see 132, which is the concrete ingredients and related products. And under that we have the
four-digit product class and the six-digit class and then also the eight-digit individual item class, which
is the one we want to take it down as far as we can. If we can get to an individual item, that's the best
one to give us the data that's most applicable to the process that we're in.

In our particular scenario, we were using sand and gravel, and we were also -- it was appraised at a
value in-place. So here 13210113 we have construction sand and gravel, run of pit or bank, which
seems to fit exactly what we're looking for. So we'll click on that.

Down in step 3, we see that seasonally adjusted is shadowed out, so all we can have is not
seasonally adjusted for this example, and then we click get data. It brings up a table, a database.

We look at this and we notice right away that the BLS only started collecting data for construction
sand and gravel, run of pit or bank, starting in June of 2006. So it doesn't meet the dates that we
need for our example, which was December 31st of '05. So we need to go back and see if we can
find a better table.

We'll keep the same group. We're going to go look at our items. We don't see anything there that's
better than what we had. So that means we've got to step up to the product class, and we'll click on
construction sand and gravel.

In step 3, we see that we have both the seasonally adjusted and not seasonally adjusted buttons
available. We are in a Field Office where that may be applicable, so we'll deselect the not seasonal
adjusted. We'll get the data. It brings us up the table again. Let's get this situated a little better.

From the table we generated for the BLS website, we see that the January index is 241.7 and the
base index of December 2005 was 200.1.

Now let's do our calculations. We have our '08 January index, which was 241.7. We have our base
index for '05, which is 200.1. Our base price is 50 cents per cubic yard. So we divide the '08 index
by the '05 index and it gives us a figure of 1.20. Multiply that times the 50 cents per cubic yard and it
gives us a price of 60 cents.

So we increase the contract price of 50 cents per cubic yard by 10 cents to 60 cents per cubic yard.
This is for the remainder of the material that's left on the contract.

Now let's go to example 2, which says: In July of 2003, a Field Office received a request for a sale of
decorative rock. The deposit was a reddish rhyolite that would be mined and crushed to various sizes
from 5/8 inch to 1 inch. This would be used for landscaping rock. A regional appraisal was
completed in January of 1998. The fair market value for the decorative rock in the subject market
was appraised from $1 to $1.25 per ton on an across the scales basis.

So now I need to go to the website again to get our table. Here we are again back at the website for
Bureau of Labor Statistics. We're going to click on the Databases & Tables. We're going to scroll
down until we get to the commodity data and click again on the one screen data search. This pulls up
our commodity database. We're going to choose 13, which is our nonmetallic mineral products. From there in the number 2 step, we're going to look for decorative rock, and what we'll find without going all the way through the database, there is nothing specifically that addresses decorative rock. Because they use the decorative rock in landscaping and construction medians and other construction developments, we can say that it's related to the construction industry and it will fit in this basic group here. Probably the one that's best suited would be the crushed and broken stone because that's what this is. It's stone that's being crushed and then used. So we'll click on that.

Here in step 3 we see that we again have the not seasonal adjusted square highlighted, so that's the data we're going to get. We click on the data. That pulls up our table, and from this table, we'll pick our dates and do our calculations.

From our table, we see that the July index for 2003 is 172.4 and the January '98 index is 147.1. So from this we can begin our calculations. We add the two indexes. We add the base price, which is $1 to $1.25 per ton. We take the '03 index divided by another '05 index. It gives us a figure of 1.17. We take the range and we multiply that times 1.17, and it gives us a range of $1.17 to $1.46, which means we that we need to adjust our contract price by somewhere within that range.

Let's use the "Whiff Test" to verify our PPI adjustment. To establish a single fair market value price one would have to consider or compare other factors such as material quality, color and location. While the market data may not always reflect these differentials, sometimes certain types of stone may be more popular in a given area, which would cause a spike in the market price. There are a variety of things that may affect prices in the short-term, and these things may not be reflected in the PPI. You should always be aware of your local market conditions and how they are affecting price.

Our "Whiff Test" for this particular scenario is in 2003 sites located in our subject market area had prices for crushed or screened decorative rock product in the range of 5/8 inch to 1 inch in size and the places ranged from $14 to $19 per ton for the retail price. Now, the fair market value as a percentage of this primary product price for decorative rock clustered in the 7 to 11% range. We could thus assume that the seller of a $16.50 rock, which would be an average of those prices we just mentioned, would pay a royalty for that rock of somewhere in the neighborhood of $1.16 to maybe as much as $1.81 per ton.

So let's see how that compares. Now, the fair market value ranges shown by the PPI adjustment were $1.17 to $1.46. That's not out of line with what we calculated for the fair market estimates as a percentage of the calculation. We had a range of 1.16 to 1.81. So at least at the low end of 1.17 versus 1.16 they're very similar, but we should be concerned about the high range where we have a variance of 1.46 to 1.81. So we would need to justify or find out why that's the case.

Now, the actual regional appraisal that was done for this material in 2003 suggested a range of $1.25 to $1.75 per ton. The factors that need to be considered that may affect what this fair market -- where this fair market value lies within this range might include the site location, the material quality and the level of competition.

Since the PPI was used five-and-a-half years after the original appraisal, you can see from this example how the use of the PPI may not always reflect the actual market conditions over time. So there's a good reason why you should use a "Whiff Test" to try to verify your range.

Now it's time for you to try an adjustment on your own.

Exercise 1

Exercise 1. This is the scenario. A Southern California Field Office has a regional appraisal that has set the value of sand and gravel at 85 cents per cubic yard, or the equivalent of 75 cents per ton as of January 2006. Two years later in March of 2008, the Field Office wants to adjust their appraisal. You
need to determine the adjustment using the PPI. Select the answer you believe is correct from those listed below. No guessing. Follow the process from the examples I've already covered with you.

When you are finished and have determined the fair market value for this scenario, go onto the review for Exercise 1 and I will review this exercise with you so you can see how you did. Good luck. See you in a few minutes.

**Exercise 1 Review**

Welcome back. Let's review Exercise Number 1.

A Southern California Field Office has a regional appraisal that has set the value of sand and gravel at 85 cents per cubic yard, or 75 cents per ton as of January 2006. Two years later in March 2008, the Field Office wants to adjust their appraisal. Your responsibility was to determine the adjustment using the PPI.

So let's review the solution. This should be pretty straightforward based upon our previous examples. We need to first go to the website.

Here we are at the Bureau of Labor Statistics website. We're going to click on the Databases & Tables tab. This will take us to the Producer Price Index commodity data where we pick the one-screen data search.

Then we have the Producer Price Index commodity data. We're going to scroll down until we find the nonmetallic mineral products, number 13, which populates the number 2 screen.

Then we're scrolling down on that looking for our construction sand and gravel, crushed stone.

We're going to in number 3 select the not seasonally adjusted data, and we're going to select get data, which then takes us to this table where we'll get our data for our calculations.

Here we have a copy of the database of the table from the BLS website. I've cut and pasted it to this Powerpoint so we can use it for the purpose of this exercise. This is the same thing you can do when you're documenting your process in your own report.

From this table, we see that the March of 2008 figure, or index, is 247.1. Note the "P" next to that. This signifies a preliminary data, which will change after it's finalized. So be aware of that.

In January of 2006 we have an index of 206.7.

So let's proceed to our solution. We have our two indexes. And our base price is 85 cents a cubic yard. So we're going to take the March '08 index and divide it by the January index. We come up with a figure of 1.20. Take our base price, multiply that times 1.20. It gives us a value of $1.02. We need to take that $1.02 and subtract the 85 cent base price that from. That gives us an adjustment of 17 cents, which is our correct answer.

Now let's proceed to another exercise and go on to exercise number 2.

**Exercise 2**

Here we have the scenario for Exercise 2. The regional appraisal for flagstone completed in January of 1998 indicated a range of $3 to $5 per ton across the scales. In July of 2002, you receive a request for a sale of 100 tons of flagstone. You need to determine the adjustment using the PPI. Select the correct answer from the choices below. No guessing. Follow the process from the examples I've already covered with you.

Now go ahead and proceed to the Exercise Number 2. When you have finished and have determined the fair market value for this scenario, select the Exercise 2 Review button and I will review the exercise with you so you can see how well you did.
Exercise 2 Review

Okay. Let review Exercise 2. The regional appraisal for flagstone completed in January of 1998 indicated a range of $3 to $5 per ton across the scales. In July of 2002, you received a request for a sale of 100 tons of flagstone. You needed to determine the fair market value adjustment using the PPI. First thing we need to do is go to the BLS website.

Here we are at the Bureau of Labor Statistics website. We're going to click on the Databases & Tables tab. This will take us to the inflation and prices indices, and the prices producer portion of that indices, commodity data is the one we want. We click on one screen data.

This brings this up our producer price commodity index tables. We're going to highlight nonmetallic mineral products number 13.

In the data table 2 I chose the dimension stone, individual item. It seemed to match up with the flagstone that we're using for this particular exercise. Highlight that.

The number 3 data table, the not seasonally adjusted is highlighted. That's the one we can use.

We push the number 4, get data. That brings us up our table that we need to use for our calculations. There's our table.

This is a reproduction of the table that we found on the website. From here we see I've highlighted the January 1998 data at 140 and the July 2002 data at 162.2. Now we'll look at our solution. Our July index, 162.2. Our January base index of 140. As you recall, the base price range was from $3 to $5 per ton. We're going to take a July index and divide it by the base index. When you put that into your calculator, you'll actually get a number of 1.1585714, but because we're dealing with dollars and cents in the final solution, we'll going to round the figure to two places, and that number becomes 1.16.

So we take our base price range, multiply it by 1.16. We get a range of 3.48 -- $3.48 to $5.80 per ton. So the correct answer for this example was C.

Now, when we -- in actuality, when the regional appraisal was completed in July of 2003, which was just a year later, the suggested price range from the regional appraisal was $4 to $7 a ton, which would be the answer for D. So if you chose D as the correct answer, you're psychic. However, you need to have the factual substantiation from the supporting appraisal before you can use that kind of figure, otherwise you could be accused of overcharging and you might end up in court or dealing with IBLA.

The harder part of this problem -- or the solution to this problem is deciding where the price would fall within in range of 3.48 to 5.80 per ton, but that's training for another. Therefore, let's go ahead and summarize what you have learned today.

Summary

We covered quite few things today. Remember, one of the first things you need to do is to establish the commodity to be appraised, whether it be sand and gravel, crushed stone, flagstone. And then you need to determine the current appraised value. At some point there should have been an appraisal done and there should be a value for the commodity that you're going to adjust. Then you would need to access your BLS website at www.bls.gov. You're going to select the proper PPI for our situation. We always want to select the commodity data. Then from the tables that you generate, you're going to make sure you pick the correct indexes. And then you're going to complete the PPI computations, always correctly. And from that you will be able to adjust your contract price or your free use permit. And at all times you want to document your process so that anybody can follow your procedure.
Remember, there's a lot of money to be gained or lost for -- from the public coffers based upon the adjusted appraisal that you do or don't do.

Now, don't forget to take it post-test in DOI Learn. There are a total of three questions on the post-test that will require you to determine the fair market value for a given mineral. You must get at least two out of the three correct to receive credit for the training. Good luck.