

Test questions

Test Question #1

A FO wishes to update their mineral material appraisal for their community pits. The last appraisal was completed 03/03/97. There is little or no activity in the pits during the winter months. The FO did an update using the PPI in March of 2001. The FO decided to again use the PPI to extend the appraisal in June of 07. The FMV for sand and gravel for 1997 was \$0.40/cubic yard. In 2001 FMV for sand and gravel was adjusted (using the PPI) to \$0.45/CY. What would be your recommendation for the FMV of the sand and gravel for 2007?

- a) \$0.62/CY
- b) \$0.45/CY
- c) \$0.55/CY
- d) None of the above

Solution:

Correct answer is (d)

If you went through the process as shown you would have derived an answer of (a) \$0.62/CY (see below). But the correct recommendation would be not to use the PPI due to the fact that from 1997 to 2007 is a period of ten years which exceeds by four years the recommended time frame with in which to use the PPI for adjustments. A new appraisal is way past due!

Procedure:

Go to - <http://www.bls.gov/>

Click on the **DATABASE & TABLES**

Scroll down to the **Inflation & Prices section** where you will see **Prices – Producer**.

Under Prices – Producer you will find **Industry Data** and **Commodity Data**

From the Commodity Data we choose **One Screen**.

For data base # **1** we scroll down and see that #13 is still our best choice.

For # **2** we will choose *132101 Construction sand, gravel, & crushed stone*

For # **3** we will un-select **Seasonally Adjusted** as the pits are inactive during the winter months

For # **4** click on **Get Data and adjust for dates**

The following table is produced

Producer Price Index-Commodities

Series Id: WPS132101													
Seasonally Adjusted													
Group: Nonmetallic mineral products													
Item: Construction sand, gravel, & crushed stone													
Base Date: 198200													
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1997	147.2	147.0	147.2	147.6	148.0	148.2	148.3	148.6	148.8	149.2	149.3	149.7	
1998	150.2	150.8	151.2	152.0	152.3	152.8	153.1	153.4	153.8	154.2	154.5	155.1	
1999	155.5	155.6	156.0	155.8	156.0	156.7	157.1	157.7	158.4	158.8	159.7	159.7	
2000	160.1	160.4	161.2	162.1	162.9	163.3	163.4	164.0	164.6	164.9	165.3	165.2	
2001	166.2	166.9	167.5	167.7	168.2	168.7	169.0	169.6	169.9	170.2	170.5	170.9	
2002	171.3	171.5	172.1	172.1	172.5	172.6	173.1	173.4	173.8	174.2	174.5	175.8	
2003	174.6	175.2	175.5	175.8	176.3	176.8	176.8	177.4	178.2	178.9	179.5	180.5	
2004	179.4	179.8	180.6	181.3	182.0	182.8	183.6	184.4	185.1	186.2	187.1	188.5	
2005	189.6	190.7	191.4	192.5	193.7	195.4	195.9	197.2	198.7	200.1	201.8	203.2	
2006	205.0	206.5	208.1	209.4	211.2	212.9	215.2	216.9	218.1	219.9	221.1	222.3	
2007	224.3	226.0	227.7	229.2	230.0	231.1	231.0	234.1	235.4	239.1	240.3	240.9	

Our base price was \$0.40/CY

The index for March 1997 is 147.4

The base index for June 2007 is 230.6

We divide the June 07 index by the March 97 index

$$230.6 \div 147.4 = 1.56$$

Base price range \$0.40 multiplied by 1.56 equals \$0.62/CY

Test Question #2

In 2007 a FO discovered a innocent trespass of sand and gravel that occurred from 1997 to 2001. The trespasser provided records that showed the following production, measured by truck count and volume.

1997 – 600 CY
1998 – 1300 CY
1999 – 2500 CY
2000 – 5300 CY
2001 – 1000 CY

The FO Manger wants you to provide an estimate of total value of the trespass. The following information is available:

The conversion rate is 1.5 tons/CY

A regional appraisal in 1998 put the FMV for sand and gravel at \$0.95/ton

Another regional appraisal in 2003 put the FMV for sand and gravel at \$1.25/ton

I have included some hints and assumptions as there is a level of professional judgment in the process that should be left up to your rational. What you are comfortable in defending. For this exercise I don't want anyone to get to far a field in their possible answers.

Hints: Use the Annual Column in the PPI table; when adjusting from 1998 to 1997, be careful of your numerator and denominator; one question is whether to use the 1998 or the 2003 datum as your base for determining the FMV for 2001. Try both to compare your results and then consider what you are seeing when comparing 1998 vs. the 2003 appraisals and the change in PPI adjustments over the same time period, before deciding which to use.

Assumption: For the purposes of this exercise we will assign the FMV of \$0.95CY to year 1999 and 2000 assuming that we will follow the two year policy for adjusting the FMV. One could also argue that we should apply the PPI to both 1999 and 2000 to adjust for inflation.

What is the total value of the material removed, not including interest and administrative costs?

- a) \$16,059.00
- b) \$14,613.00
- c) \$15,246.00
- d) \$14,763.00

Solution:

The correct answer is (a)

Procedure:

Go to - <http://www.bls.gov/>

Click on the **DATABASE & TABLES**

Scroll down to the **Inflation & Prices section** where you will see **Prices – Producer**.

Under Prices – Producer you will find **Industry Data** and **Commodity Data**

From the Commodity Data we choose **One Screen**.

For data base # **1** we scroll down and see that #13 is still our best choice.

For # **2** we will choose *132101 Construction sand, gravel, & crushed stone*

For # **3** we will un-select **Seasonally Adjusted** as the pits are inactive during the winter months

For # **4** click on **Get Data and adjust for dates needed**

The following table is produced

Producer Price Index-Commodities

Series Id: WPU132101 Not Seasonally Adjusted Group: Nonmetallic mineral products Item: Construction sand, gravel, & crushed stone Base Date: 198200													
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1997	147.2	147.0	147.4	148.0	148.4	148.6	148.7	148.6	148.6	148.7	148.7	149.0	148.2
1998	150.2	150.8	151.2	152.4	152.8	153.3	153.6	153.6	153.6	153.7	153.7	154.2	152.8
1999	155.3	155.8	156.0	156.5	156.6	157.2	157.6	157.8	158.2	158.3	158.7	158.7	157.2
2000	159.9	160.6	161.3	162.7	163.6	163.7	163.9	164.1	164.4	164.4	164.3	164.2	163.1
2001	166.0	167.3	167.7	168.4	168.9	169.2	169.5	169.8	169.7	169.7	169.5	169.7	168.8
2002	171.1	172.0	172.4	172.8	173.2	173.3	173.6	173.5	173.7	173.5	173.4	174.0	173.0
2003	174.9	175.7	175.8	176.7	177.0	177.3	177.3	177.4	178.0	178.2	178.3	178.1	177.1

To determine the PPI adjustment for **1997** we divide the 1997 index (148.2) by the 1998 index (152.8), and multiplying the result by the base price (\$0.95/ton, 1998 regional appraisal), gives us a result of \$0.92/ton.

$$148.2 \div 152.8 \times \$0.95/\text{ton} = \$0.92/\text{ton}$$

Converting 600 CY to tons and multiplying the tonnage by \$0.92/ton gives us a value of \$828 for the material removed.

To determine the PPI adjustment for **1998** we use the 1998 regional appraisal price of (\$0.95/ton). No indexing is involved.

Converting 1300 CY to tons and multiplying the tonnage by \$0.95/ton gives us a value of \$1,853 for the material removed.

To determine the PPI adjustment for **1999** we use the 1998 regional appraisal price of (\$0.95/ton).

Again, no indexing is involved.

Converting 2500 CY to tons and multiplying the tonnage by \$0.95/ton gives us a value of \$3,563 for the material removed.

To determine the PPI adjustment for **2000** we start with the 1998 regional appraisal price of (\$0.95/ton).

The index for 2000 is 163.1 and the index for 1998 is 152.8. Dividing the 2000 index by the 1998 index and multiplying the result by the base price (\$0.95/ton) gives us a result of \$1.01/ton.

$$163.1 \div 152.8 \times \$0.95/\text{ton} = \$1.01/\text{ton}$$

Converting 5300 CY to tons and multiplying the tonnage by \$1.01/ton gives us a value of \$8030 for the material removed.

To determine the PPI adjustment for **2001** we first try the regional appraisal price of (\$0.95/ton, 1998)).

The index for 2001 is 168.8 and the index for 1998 is 152.8. Dividing the 2001 index by the 1998 index and multiply the result by the base price (\$0.95/ton, 1998 regional appraisal), which gives us a result of \$1.05/ton.

$$168.8 \div 152.8 \times \$0.95/\text{ton} = \$1.05/\text{ton}$$

Next we use the regional appraisal price of \$1.25/ton (2003 regional appraisal). The index for 2003 is 177.1 and the index for 2001 is 168.8. We divide the 2001 index by the 2003 index and multiply the result by the base price of \$1.25 (2003 regional appraisal) and arrive at a figure of \$1.19/ton.

$$168.8 \div 177.1 \times \$1.25/\text{ton} = \$1.19/\text{ton}$$

Looking at the adjustments and comparing with the regional appraisals we see that the appraised price has increased at a faster rate than inflation, so we would be better served to use the 2005 base price which would be more reflective of what is happening in the market.

Converting 1000 CY to tons and multiplying the tonnage by \$1.19/ton gives us a value of \$1,785 for the material removed.

Adding up the yearly values we arrive at a figure of \$16,059, answer (a).

1997 –	600 CY x 1.5 tons/CY = 750 tons	x \$0.92/ton =	\$ 828
1998 –	1300 CY x 1.5 tons/CY = 1950 tons	x \$0.95/ton =	\$1,853
1999 –	2500 CY x 1.5 tons/CY = 3750 tons	x \$0.95/ton =	\$3,563
2000 –	5300 CY x 1.5 tons/CY = 7950 tons	x \$0.95/ton =	\$8,030
2001 –	1000 CY x 1.5 tons/CY = 1500 tons	x \$1.15/ton =	<u>\$1,785</u>
			\$16,059

Test Question #3

Your Field Office (cold climate) had an area wide appraisal done in August 1997 for four (4) community pits. The pits include one for sand and gravel, one for weathered talus, one for topsoil and one for dune sand. The sand and gravel was valued at \$0.30/CY. The weathered talus was valued at \$0.40/CY. The topsoil was valued at \$0.50/CY. The sand was valued at \$0.53/CY.

Looking at the local market for any price changes, new construction or other applicable information you find one sand and gravel operation were the current owner, who previously paid .25/CY (established in 1993) royalty to the previous owner, is now charging \$1.05/CY (one half of this cost is associated with loading the material). Otherwise, you can find no other market changes.

Choose the most correct answer.

The updated FMVs are:

- a) S&G - \$0.33, Talus - \$0.43, Sand - \$0.57, Topsoil - \$0.54
- b) S&G - \$0.33, Talus - \$0.43, Sand - \$0.56, Topsoil - \$0.53
- c) S&G - \$0.33, Talus - \$0.44, Sand - \$0.58, Topsoil - \$0.55
- d) S&G - \$0.33, Talus - \$0.40, Sand - \$0.53, Topsoil - \$0.50

Solution:

As for the local market, there is not a lot of information. There appears to be a price increase in sand and gravel, but otherwise little or no change. From this exercise we see that using the PPI can be art as well as science and that you will need to document and justify your approach as well as your conclusions. You should expect to have to use your professional judgment. The first issue is choosing the most appropriate table.

There are several possibilities as to the appropriate table or tables.

One could lump everything under *Construction sand/gravel/crushed stone* making the assumption that all the pits and commodities are mined and processed the same. Or one might conclude that the commodities are different enough that additional tables might be more applicable.

One might assume that the sand and gravel would and might require more processing than the other commodities and consider S&G separately.

Because it is not obvious as to where the topsoil or talus might fit, one would need to decide where to lump them.

One might try a variety of tables to see how they compare with each other and with what you might see in the market.

Possible tables might include *Industrial Sand Mining* for the sand deposit and since topsoil has no place of its own and is similar in composition to sand we might use this same table.

Talus again has no table of its own and is different in deposition and mining methods from the others.

For the S&G community pit I chose the Construction sand/gravel/crushed stone, seasonally adjusted because of the inclement winter weather. I calculated talus from this table also. I used the Other industrial sand table to adjust the sand and topsoil.

I suppose that one could argue also that because the market study showed no changes in the other commodities that the prices for the other commodities should stay the same (answer (d)). One could also argue for lumping all the commodities into the same *Construction sand/gravel/crushed stone, seasonally adjusted* data table (answer (a)) as all the commodities are handled and used in a similar manner.

So the correct answer the way I did it is (b)

- a) S&G - \$0.33, Talus - \$0.43, Sand - \$0.57, Topsoil - \$0.54 (Construction sand/gravel season adj.)
- b) S&G - \$0.33, Talus - \$0.43, Sand - \$0.56, Topsoil - \$0.53 (S&G w/industrial sand)**
- c) S&G - \$0.33, Talus - \$0.44, Sand - \$0.58, Topsoil - \$0.55 (Construction sand/gravel not season adj.)
- d) S&G - \$0.33, Talus - \$0.40, Sand - \$0.53, Topsoil - \$0.50

I think you could have justified/defended a, b or d, as long as you documented the process and your rational and justification in your report. So if you chose a, b or d and documented your process you got the question right. If you chose (b) you get extra credit.

Process

Go to - <http://www.bls.gov/>

Click on the **DATABASE & TABLES**

Scroll down to the **Inflation & Prices** section where you will see **Prices – Producer**.

Under Prices – Producer you will find **Industry Data** and **Commodity Data**

From the *Commodity Data* we choose **One Screen**.

For data base # **1** we scroll down and highlight #13.

For # **2** we highlight #132101 *Construction sand, gravel, & crushed stone*

For # **3** we select **Seasonally Adjusted** data because the FO is in a cold climate where inclement weather may hinder work.

For # **4** click on **Get Data**

Adjust the dates on the table produced to 1997-2000

The following table is produced:

Data extracted on: July 24, 2008 (5:30:56 PM)

Producer Price Index-Commodities

Series Id: WPS132101													
Seasonally Adjusted													
Group: Nonmetallic mineral products													
Item: Construction sand, gravel, & crushed stone													
Base Date: 198200													
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1997	147.2	147.0	147.2	147.6	148.0	148.2	148.3	148.6	148.8	149.2	149.3	149.7	
1998	150.2	150.8	151.2	152.0	152.3	152.8	153.1	153.4	153.8	154.2	154.5	155.1	
1999	155.5	155.6	156.0	155.8	156.0	156.7	157.1	157.7	158.4	158.8	159.7	159.7	
2000	160.1	160.4	161.2	162.1	162.9	163.3	163.4	164.0	164.6	164.9	165.3	165.2	

$163.3 \div 148.3 = 1.09$

$1.09 \times \$0.30/\text{CY (sand and gravel)} = \$0.33/\text{CY}$

$1.09 \times \$0.40/\text{CY (talus)} = \$0.43/\text{CY}$

Producer Price Index-Commodities

Series Id: WPU13990121													
Not Seasonally Adjusted													
Group: Nonmetallic mineral products													
Item: Other industrial sand													
Base Date: 198206													
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1997	126.1	126.3	126.4	128.4	128.7	128.8	129.5	129.5	129.5	129.5	129.7	129.7	128.5
1998	130.1	130.4	130.4	131.3	131.3	131.3	131.3	131.3	131.3	131.3	131.3	131.4	131.1
1999	131.9	132.3	132.2	132.2	134.8	134.8	134.8	134.8	134.8	134.8	134.8	134.8	133.9
2000	134.9	136.4	136.2	136.2	136.2	136.7	136.7	136.7	136.7	136.7	136.7	136.9	136.4

$136.7 \div 129.5 = 1.05$

$1.05 \times \$0.50/\text{CY (topsoil)} = \$0.53/\text{CY}$

$1.05 \times \$0.53/\text{CY (sand)} = \$0.56/\text{CY}$