Issue #16482:

Pyplot hlines and vlines do not use the 'lines.color' property in rcParams by default

Potential source of the bug:

The source of the bug is the default argument values in the functions.

In pyplot.py:

The functions hlines and vlines

```
def hlines(y,xmin,xmax,colors='k',linestyles='solid',label='',*,
        data=None,**kwargs):
def vlines(x,ymin,ymax,colors='k',linestyles='solid',label='',*,
        data=None,**kwargs):
```

In _axes.py:

The functions hlines and vlines

```
def hlines(self,y,xmin,xmax,colors='k',linestyles='solid',label='',**kwargs):
def vlines(self,x,ymin,ymax,colors='k',linestyles='solid',label='',**kwargs):
```

In collections.py:

Code snippet from class LineCollections

```
if colors is None:
            colors = mpl.rcParams['lines.color']
```

As shown above, the issue is when no value is given for the argument “colors”, it defaults to ‘k’ (the color black). But when the argument “colors” is given None in LineCollections, it is set to the default (which can be different from ‘k’).

Impact on other parts of the system:

Implementing a fix to this bug should in no way affect other parts of the system. The fix should only affect how the colors of hline and vline are selected when initialized using None or left unspecified. Moreover, the color selection system is very contained, and thus should not interact with components other than the given hlines or vlines.

Work estimates:

Software Design: 5 hours

Software design will take a while for this one. The functions are spread out between all layers of matplotlib so it will take time to understand all the interactions such as when the modified functions are called and what functions they call.

Implementing and Unit Testing: 3 hours

We expect Implementing and Unit testing to be quick. We already have the unit tests planned and once the situation is understood it should be quick to implement the fix and add the unit tests.

Integration and System Testing: 1 hours

We don’t expect this to affect other parts of the system so this will be quick.

Operation and Maintenance: 3 hours

This is a fix that changes functionality that newer/casual users will use and the corresponding documentation. Because of this we expect to receive feedback during the pull request about any of, proper documentation, proper unit testing, altering other parts of the system to work the same way (other line classes).

Justification for bug selection:

This bug was selected to be worked on because it seemed like it would be an appropriate level. When doing the first phase, requirements and definitions, this bug was well understood at a high level and we had an idea of where the bug would be in the code (among hlines, vlines, and the update functions called within). We expect that the hardest part of fixing these bugs, will be finding them in the code so a bug that wouldn't take long to find is the ideal.

The only risk associated with this bug is that it is a frontend issue that likely originates from the backend. This means it will involve classes/functions from pyplot, artist, and the backend. This means even if the bug is easy to find, it might be difficult to understand how the different parts work together.