Digital Information Handbook

There's a surprising amount of information about mining permits, water quality, and coal bed geology publicly available – if you know where to find it and how to interpret it. Here's an introduction to some of the most useful tools that are available. This is by no means a complete guide, but it should get you started gathering information.

DEP Permit Search
http://www.dep.wv.gov/permitting/Pages/default.aspx

The first place to look for information about mining permits is the DEP's Permit Search page. There are a few different searches depending on what you are looking for. NOTE: Do not assume this is the most up-to-date information. While the site is regularly updated, it can contain information that is not 100% accurate and/or current. This is no substitute for direct communication with the DEP, looking at the actual permits, or FOIA'ing for specific information. However, it still has many uses when looking for instantly available information. WARNING: The DEP's website breaks routinely. Be prepared to lose access at any time. Save anything really important you find to your computer.

Mining Permit Search

This is where you will find information about SMCRA Article 3 Mine Permits. You can find information here about mine locations and boundaries, which seams they are mining, which activities are allowed, what violations they have gotten and other basic information.

You can search for permits by coal company, permit number, county, or USGS quadrangle. This will return a list of permits with the following information:

Coal Company, Type of Operation, Permit #, Issue Date, Facility Name (if available), and Status

Most of these are self explanatory; however, there are a couple of things to note.

First, an explanation of different statuses.

New – an active permit in the first 5 year permit cycle
Renewed – an active permit older than 5 years
Inactive – a permit that has received permission to become temporarily shut down
Active – a permit that was Inactive that has since been reactivated
Phase 1 Released – a permit that has had some of its bond released and is being reclaimed
Completely Released – a permit that is completely reclaimed and the company's bond returned
Revoked – a permit that the DEP has taken away due to truly egregious behavior

Second, Type of Operation is fairly unreliable, though it gives you a starting place. Sometimes surface operations can be filed with an underground permit. Preparation plants are particularly difficult and can be found filed with almost any kind of permit. "Other" permits can be many

things from a haul road to a massive impoundment. To really find out what a permit is for you'll need to click on the permit number to take you to the "Permit Details Page".

Permit Details Page

This page provides you with most of the essential basic information about a permit, broken down into several sections.

Permit:

The info here is mostly self-explanatory. One note about the different acreages.

Original Acres - the number of acres applied for in the original permit
Disturbed Acres – the number of acres currently actively disturbed (areas that have been "reclaimed" don't count of course)
Reclaimed Acres – the number of acres they have supposedly fixed
Total Acres – the total acres currently permitted (often higher than original acres due to significant boundary revisions or other additions to the permit)

Permit Status:

There are a bewildering number of specific, different permit statuses depending on exactly where they are in the mining process. The following list is a best guess at what exactly they all mean.

A1 – Active, Moving Coal Possible – a permit that could be extracting coal, but is not
A2 – Active, Reclamation Only – a permit that is still active but is only doing reclamation at the moment and not moving coal
A3 - Active, Reclaimed – a permit that is reclaimed but has not yet had any of its bond released
A4 – Active, No Coal Removed – a permit that is active but has not extracted any coal
AM – Active, Moving Coal – a permit that is actively extracting coal
IA – Approved Inactive Status – a permit that has permission to temporarily shut down
NS – Not Started – a permit that is complete and issued but no work has begun
P1 – Phase One Release – a permit that is now being reclaimed where backfilling and grading is complete and they have received a portion of their bond back
P2 – Phase Two Release – a permit that is now being reclaimed where revegetation is complete and they have received their bond back.
PV – Phase One Release - a permit that is now being reclaimed where 60% has been revegetated and they have received a portion of their bond back
RC – Reclaimed, but Chemical Treatment of Water – a permit where reclamation is complete, but chemical water treatment is ongoing due to continued discharge problems

Permit Activities Allowed:

Here is where you will find what exactly the permit is for. It will tell you which kinds of mining are allowed at the site and what other activities (such as refuse disposal, haul road, load out,

preparation plant, etc) are allowed. However, once again you cannot count on this portion being complete or even sometime there are at all. It will also give you the date that particular activity was added to the permit if it wasn't there from the original application.

Permit Activities:

Here you will find a running tally of things that have happened to the permit, including the date of each revision (including acres added and/or deleted if applicable), each renewal, and any changes in ownership or permit status. Of particular interest are DAM Certifications. That tells you when they added an impoundment or other large water dam. Impoundments will also have regular entries for EWP – Emergency Warning Plans. You will also find if they have been issued a Show Cause or Cessation Order.

Land Uses:

Here you will find their designations for Premining and Postmining Land Uses. This means what the land was used for before they blew it up and what it will supposedly be used for afterwards.

Variances:

Here you will find a list of all the ways the DEP is allowing the coal company to break state and federal law (unfortunately the same laws give the DEP permission to do this). You will notice that every large surface mine has several. The variances are fairly complex - too much to be covered here.

County/Quad:

This lets you know which county the permit is in, and what USGS quad map you can use to locate it.

Inspectable Units:

Here you will find a listing of each dam, valley fill, and water discharge (called Outlets) on the permit. This is particularly useful for finding impoundments.

Permit Geography:

Here you will find locations for each of the above units as well as the approximate center of the permit itself. Here is where you will also find a link to the Map feature ("Show Map").

Strata Involved:

Here you will find a list of which coal seams they are mining. Generally, the greater the number for a surface mine, the more elevation they are blasting away. This is particularly useful in conjunction with the Coalbed Mapping Project (see below). NOTE: The naming of coalbeds can

be extremely inconsistent. Different companies use different names for seams, and hardly anybody uses exactly the official USGS naming system. (see attached partial list). There is no easy method for sorting through that particular mess, but the Coalbed Mapping Project can sometimes help.

At the bottom you will find links to "Inspection Details" and "Violation Details". The "Inspection Details" page is confusing and of limited utility. However, "Violation Details" is a treasure trove of useful information.

Violations Details Page

This page will give you a list of violations organized by operator of the permit and then by date. Most info is self-explanatory (you will note the disgustingly low fines these people pay).   The most confusing feature is the "Enforcement Standard Description". This SHOULD tell you what kind of violation was issued. However, they often file some violations under catch-all categories such as "Permit Conditions" or "Other Conditions". This is done to avoid triggering the "Show Cause" process which can be initiated if a permit receives three of the same category of violations within 12 months (but only if the violations are "deliberate" or "unwarranted", i.e., the DEP feels like it or gets pressured into it). This is a CRITICAL flaw in the DEP's program and documenting this behavior is essential. This is a complex process involving reviewing the WV SMCRA regulations that are cited and determining whether a more appropriate Enforcement Standard Code should have been used. Finally, under "Description" you will usually see "Notice of Violation", but sometimes you will see "Cessation Order". Cessation Orders are much more serious and are issued when a condition on the site is determined to create an imminent health and safety danger to the public or an imminent harm to the environment. A Cessation Order prevents mining activities in the area of the violation until it is fixed.

Clicking on the Violation Date will bring you to the "Violation Summary" page.

Violation Summary Page

This page will give you a short description of the exact violation and what actions the company took (or didn't take) to correct the violation. Unfortunately, the amount of detail available is mostly at the discretion of the inspector that issued the violation.

Violation Details:

Here you will find the basic info about the violation. Most important are the name of the inspector issuing the violation and the sections of code and regulations that are violated. "Current Evaluation" will also tell you the current status of the violation.

Extended - the violation is ongoing and not fixed.
Terminated - the violation has been fixed
Withdrawn - the inspector has taken the violation back (sometimes if it was issued in error, but often seemingly just to let the company off for quickly fixing it)

Negative Pattern Determination – the violation was eligible to trigger the "Show Cause" process, but the DEP decided not to issue one
Consent Order (In Effect or Terminated) – the DEP did initiate a "Show Cause" but made an agreement with the company instead of shutting down the permit

The "Assessed?" question tells you whether or not the company was fined.

Violation Activity

The first block will tell you specifically what the violation was as well as the company's deadline for fixing it ("Abate By Date"). The subsequent block will provide updates on what the company has done to fix the violation. The company has to report within 30 days generally and the violation must be fixed within 90 days, except in cases where regulators, judges, strikes, the weather, or safety regulations prevent the company from doing so. If the company can't come up with one of those excuses and doesn't fix it within 90 days, the inspector is obligated to issue a Cessation Order. In practice this is another area where the DEP program is often flawed. (You'll notice a pattern of the DEP doing everything possible to avoid shutting down a mine.) Somewhat more information is often available by FOIA'ing for the violation by Permit Number and Violation Number.

Map Feature

The DEP has a GIS mapping tool linked to from each permit that you can use online. It is STRONGLY recommended that, if you can, you download the Google Earth layer that contains the same information. It is MUCH easier to use and typically also more accurate. The disadvantages are that it is not frequently updated and will not have the most recently issued permits and you must update it yourself by downloading the most recent file of "Mining Permit Boundaries" here:
http://gis.dep.wv.gov/kml/

If you don't have Google Earth or need to look at recently issued permits, the DEP Map is a perfectly serviceable tool. Nearly everything you need to know to use the Map is contained in the "help" tab located at the bottom edge of the map. Navigation tools for the maps are above it, while the tools controlling what information you see on the map and other useful functions are at the bottom. A couple of important notes to make things easier. When you click a link on the "Permit Geography" section, it will take you to the map with a big red "X" on the location of the particular inspectable unit. The map will have different layers of information that you can turn on and off and the default you start with has all the layers turned off. That's not very useful, so the first thing you should do is to go down below the map and turn on the "Mining Permit Boundaries" layer by clicking the checkbox and then clicking the button with the pencil to redraw the map (which you must do every time you change which layers are displayed). The second set of checkboxes headed "query" determines which detailed information you get by clicking on the map using the question mark button at the top.

There are a few other searches that are also useful.

Pending Permits

This is where you can search for applications that have not been granted yet. This is most useful for looking for new mining permit applications, but it also will have pending revisions, renewals, bond releases or really any change in a permit or permit status. Be sure to be pick exactly what you are looking for from the drop down menu.

The search generally works exactly the same as the mining permit search with a couple of differences. When the list of applications is generated, you get to the permit summary page by clicking on the "Type" column. The permit summary page for an application contains most of the same information as the summary page for an issued permit. The additional information is primarily about bonding and insurance. "Bonding Type" tells you whether they have to put up all the bond at once or bit by bit as they go. "Blasting Insurance" tells you whether there are "protected structures" (like someone's house) within the tiny radius that they claim can be affected by blasting (0.7 miles). IMPORTANT: Maps of the permit boundaries are NOT available online for pending permits. You must go to the DEP for that.

There are also three dates.

Submitted Date – when the application was first filed
Admin Complete – when the DEP determined that all necessary information had been submitted
Tech Review Complete – when the DEP approves of the mining plan (issuance of permit is imminent)

Clicking on the "Status" column will bring you to the "Application Milestones" page.

Application Milestones:

Here you will find a blow by blow accounting of the permit process. It can be dull, but sometimes yields valuable information. Particularly important is when the comment period begins or ends. Comment periods begin with a Public Notice of the permit advertised. There will also be a record of each person that has objected to the permit and information about public hearings ("informal conferences") if they happen.

Application Milestones Still Required:

Here you will find out the major steps left to take before the permit is issued. This can be useful in gauging how close a permit is to being issued as well as identify which options you have left to intervene in the process. WARNING: The steps are not always listed in the order in which they will be completed. The last three steps are generally "Bond Received", "Signoff, permit supervisor", and finally "Sent to Headquarters."

NPDES Permit Search:

National Pollution Discharge and Elimination System (NPDES) permits are the Clean Water Act permits that regulate water quality leaving a mine. Water is only allowed to leave a mine site through approved channels ("outlets") that are regularly tested for some measures of water quality. The limits are set by these permits. There will also be other water quality monitoring station to ensure compliance.

The search works just like the mining permit search. Clicking on the permit number will take you to the Permit Details page.

Permit Details

Most of the page is similar to the mining permits page with a couple of differences. The "Related Permits" section will list the mining permits, underground injection permits, and other NPDES permits that the permit is connected to. This can be a way to find out if a mine is injecting anything. For the "Inspectable Units", all units will be outlets, injection monitoring, or stream monitoring locations. If the outlet discharges into a stream, the stream name will be listed. Violations are not filed with NPDES permits and can be found with the associated mining permit.

Water Resources Permit Search

Here you will find injection permits mixed in with many other permits. To find injection wells, look for "5X13 – Mining, Sand and Other Backfill Wells" under well type. The information available from this search is almost useless. All you learn is the most recent renewal date and the average flow permitted in millions of gallons per day. It doesn't even tell you what they are injecting.

A far superior tool for injection permits, though somewhat difficult to use, is the DEP E-Cabinet. Virtually all DEP files on injections are publicly available here with a regular search feature like a web search. At the time of writing, E-Cabinet is down. If it ever become public again, you can likely find it here: http://ecabinet.dep.wv.gov/

EQUIS Trend Station Explorer
http://gisonline.dep.wv.gov/equis/equis.html

The most extensive online database of surface water quality in West Virginia is the DEP's EQUIS Trend Station Explorer. The DEP regularly tests 235 locations in streams and rivers throughout the state for a wide variety of water equality measures, including some heavy metals. All this data is displayed in a beautiful mapping program publicly available online... if you know where to find it. You won't find this link on the DEP's website or anywhere else, but it is one of the most useful tools around. There are test results from 2002 on.

Navigation

When you open the page you will see a map of West Virginia and lots of multicolored dots. Each dot is a testing site ("trend station"). You can double-click to zoom in and there is a bar on the right to control zoom level. Click and drag to move the map around.

At the top, there are two words with drop down menus.
The one on the left controls whether the background image is aerial photography or USGS topo maps.
The one on the right controls what test results you are looking at (Dissolved Oxygen, Iron, pH, etc).

The color of each trend station is determined by the average level of whatever is selected above with green being the lowest and red being the highest. Mousing over a trend station will display the trend station number, number of times the selected parameter has been tested for, the minimum test result, the average test result, the maximum test result, and the standard deviation in that order.

Sample Data

Clicking on one of the trend stations will highlight the basin drained by the stream above the trend station and display the average test result for the selected parameter. A window will also pop up with a list of sample dates and number of parameters tested for each time. Clicking on a row will give you all the testing results from that date. Be sure to note the units for each result. Look at the "Fraction" column to see which results are "Dissolved" and which are "Total". "Total" measures suspended metals; "Dissolved" measures dissolved metals. Unfortunately, for most metals they only test for "Total". Just because all the "Total" tests come back clean for a metal does NOT mean there isn't a significant amount of that metal dissolved in that stream. The sample data window can also be opened by clicking the first button from the left.

Scatterplot

Click the second button from the left for a graph with all the test results for the selected parameter by date. You'll have to click "Get Results" after the window pops up to see any data. The only annoying thing is that when both "Total" and "Dissolved" tests for the same metal are done, all the results show up together with no clear way to distinguish between them.

Bar Graph

Click on the third button from the let for a list of all the trend stations in the state sorted highest to lowest by average test result for the selected parameter. Mousing over a bar gives you the same information as mousing over the trend station dot and clicking on a bar will zoom the map to that trend station.

Filter

Click on the fourth button from the left to filter out all trend stations with average results above or below a certain threshold.

Search Feature

Click the fifth button on the left to search the map for any named place. Clicking on a result will zoom the map to that location.

WVGS Coalbed Mapping Project
http://www.wvgs.wvnet.edu/www/coal/cbmp/coalimsframe.html

The Coalbed Mapping Project is one of the greatest tools available on coalfield geology. For most of the coalfields, the project has maps of each individual coal seam, where exactly the seam has been mined, both underground and surface, the elevation above sea level of the seam, the thickness of the seam, and percentage of noncoal "partings" contained in the seams. This information is invaluable in determining the flow of water in underground mines, the desirability of mining certain seams underground or on the surface, how much overburden will be removed to surface mine certain seams and a host of other important questions. NOTE: The project is ongoing and not all coal seams in all areas are yet mapped, but the coverage in the southern coalfields is generally very good and is continuously improving.

Because this is not a DEP generated tool, the help features are extremely well done and careful reading of the documentation should give you all the information that you need to use the tool. Explanations of the different layers can be found under "Coverage Explanations" and information on how to navigate the tool can be found under "Interactive Map Help". There is only one feature that isn't discussed in the help documents. That feature is the ability to extract and download the information you find.

Any information contained in these maps can be extracted and downloaded to your computer as GIS files. These can then be open and used in a GIS program and combined with other spatial data or in turn be converted to KML files for use with Google Earth. To extract whatever you are currently viewing, click the button on the bottom right corner of the navigation panel in the upper left corner of the screen.

These maps are also linked to the Mine Information Database System (MIDS), a fairly comprehensive collection of underground mine maps. If you selected "Mined and Remaining Coal" as the actively layer and query an underground mine void, some basic information about that underground mine will appear at the bottom of the map. Clicking on the link under "Aperture Card Number" will open a new tab with that underground basic information in MIDS. From that page, clicking on the "Document Number" will take you to a page with downloadable images of the mine maps for those mines that have available maps. For unknown reasons, mine maps with Aperture Card Numbers starting with 500 or 953 are not available to the public. You can search the MIDS system directly here:
http://www.wvgs.wvnet.edu/www/mids/main.php

NOTE: No specific information about surface mines is available from these maps. Only where the seams have been mined is available.

All Mining Map

Besides the maps for each individual coal seam, there is also a mapping tool that displays mining in every seam all at once. This is called the "All Mining Map" and it can be reached by clicking on "All Mining IMS" on the main page of the Coalbed Mapping Project.

The navigation is similar to the coalbed maps with the tool bars moved to slightly different places.   Each type of mining is represented by a different color
Underground mine – gray
Surface mine (area, MTR, contour) - fuchsia
Highwall mine – purple
Auger mine – yellow-orange

This map can give you a good sense of all mining activities in a certain area, but the map is still in development and not all of the features work all the time, particularly being able to click to mines and obtain additional information about them.

ACEE Permit Tracker
http://www.appalachian-center.org/foia/

The Appalachian Center for the Economy and the Environment (ACEE) has the only easy search tool for keeping track of Army Corps valley fill permits ("404 permits"). Searchable by company, state, county, watershed and other terms, their database will tell you the mine information including acreage, number of valley fills and linear feet of stream to be buried, the estimated status of the permit, and whether the EPA has intervened. The search tool will also find Army Corps NWP49 permits which are "dredge and fill" permits for remining and reclaiming previously mined areas.

ONE LAST NOTE

There's a lot of information buried in obscure places on the EPA website. However, the EPA website is essentially impossible to navigate. It is usually best to simply search their website for whatever you are interested in. Be as specific as possible, using terms like subwatershed names or Army Corps permit numbers. Or consult an expert.

Good luck and good hunting.