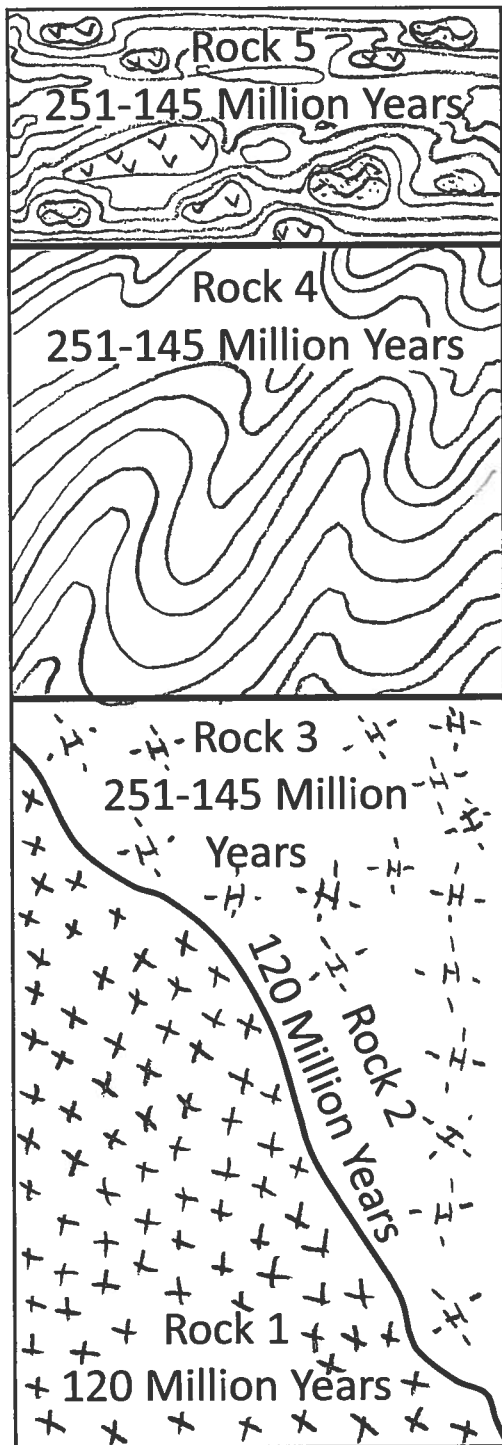


Suite 1

Rock Identification Work Sheet

ID	Color? (Light, medium, dark)	Visible grains? Yes or no	If YES, is grain size fine, medium, or coarse?	Layers? If yes are they flat or wavy?	Can it scratch glass?	Other identifiers (gas bubbles, reaction to acid)	Is it: Igneous, Sedimentary, or Metamorphic	Name
1	Light (Plag + Qtz) with Dark (biotite) Grains	Yes	Medium - Coarse	No	Yes	-	Igneous (Intrusive)	Diorite
2	Light / Dark	Yes / No	Coarse / Fine	No / Yes - Flat	Yes / No	Shows contacts between 2 rock types	Igneous / Metamorphic	Diorite / Hornfels
3	Dark	Few	Fine	Mostly Flat	Yes (Slightly)	Dark Shiny Minerals (Biotite/Hornblende)	Metamorphic	Hornfels
4	Medium	Few (Garnets)	Fine (Micas) & Coarse (Garnets)	Yes - Slightly wavy	Yes (Slightly)	-	Metamorphic	Schist
5	Med - Light with dark clasts	Yes	Very Coarse	Yes (subtle) - flat - some shearing but clasts retain shape	Some parts/clasts	Presence of multiple clast lithology that have baked rims and some shearing	Metamorphic	Meta-Conglomerate
Example	light	yes	medium	yes-flat	yes	none	sedimentary	sandstone



Carson City Suite (Suite 1)

Draw what your rock looks like in the space provided to the left. Sometimes drawings help to make interpretations.

What type of rock is Rock 5? Rock 5 is a metaconglomerate

Under what conditions do you find Rock 5 in? You find rock 5 in metamorphic conditions

What type of rock is Rock 4? Rock 4 is a schist

Under what conditions do you find Rock 4? You find rock 4 in metamorphic conditions

Looking at the textures – did Rock 4 experience lower or higher temperatures than Rock 5?
The textures look like the rock has been squished so higher

What type of rock is Rock 3? Rock 3 is a hornfels

What does the hardness and apparent relic bedding tell you about where this rock was formed?
Rock 3 was formed right next to the intrusive in the hornfels zone

How does Rock 3 conditions differ from Rock 4?

Higher temperatures & pressures

What type of rock is Rock 2?

Well, its two types of rocks Rock 3 & Rock 1

Is there any resemblance of Rock 2 to either the rocks above or below it?

Yes 1/2 is Rock 3 & 1/2 is Rock 1

What type of relationship is shown in Rock 2?

The contact of Rock 1 & 3

What type of rock is Rock 1?

A Diorite

How does Rock 1 differ from all the other rocks?

It is igneous/intrusive

Is there anything to hint at Rock 1 was emplaced before/after the other rocks were emplaced?

After it cuts through the other rocks & is not metamorphosed

Hypothesize on the next page as to what caused this rock sequence to develop the way it did and give a narrative description of depositional environment to create a mental visualization for others.

Suite 1 Hypothesis

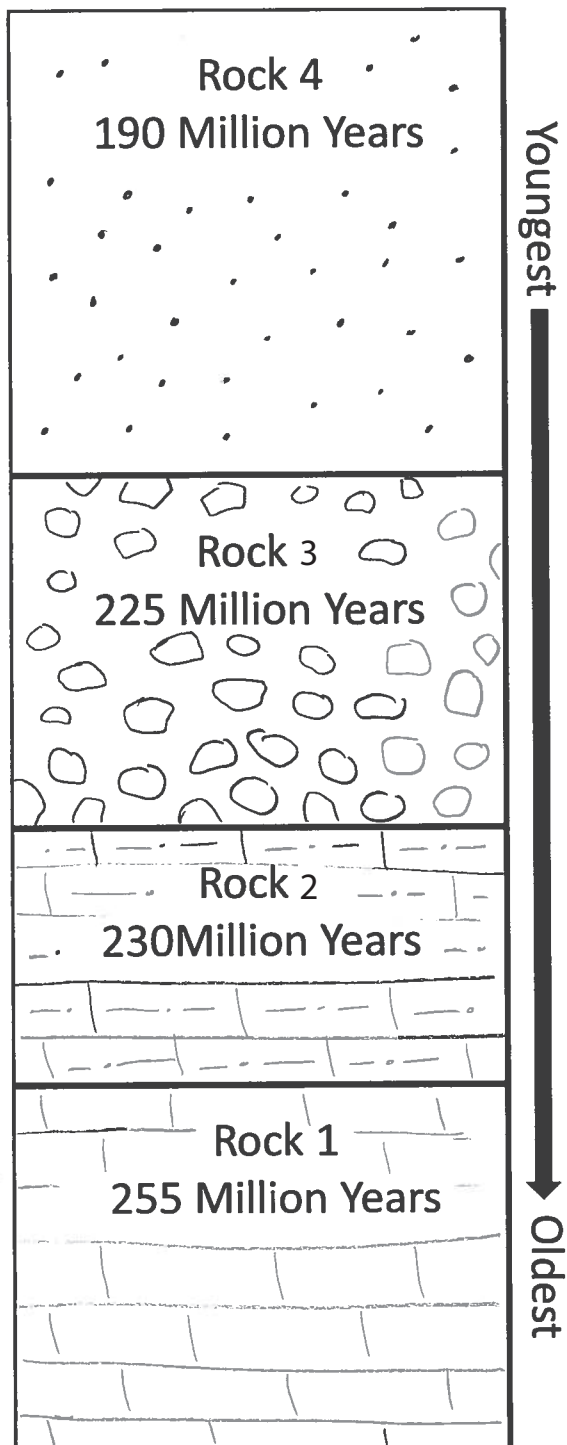
This sequence of rocks shows an igneous intrusion that metamorphosed the preexisting rock to various degrees (depending on proximity to the magma body).

Magma of intermediate composition (Diorite) intruded into an overlying sedimentary rock sequence creating varying grades of metamorphic rock. Highest temperatures and pressures occurred near the intrusion (hornfels). This metamorphism decreases with distance from intrusion (garnet schist to meta-conglomerate).

Suite 2

Rock Identification Work Sheet

ID	Color? (Light, medium, dark)	Visible grains? Yes or no	If YES, is grain size fine, medium, or coarse?	Layers? If yes are they flat or wavy?	Can it scratch glass?	Other identifiers (gas bubbles, reaction to acid)	Is it: Igneous, Sedimentary, or Metamorphic	Name
1	Light	Yes	Very fine	No	No	Reacts with HCl	Sedimentary	Limestone
2	Light	No	-	No	No	Gritty Feel (has very small grains) & Reacts with HCl	Sedimentary	Silty Limestone
3	Medium (with some dark clasts)	Yes	Medium - Coarse	No	No (few clasts can slightly scratch)	Multiple clast size, shape and lithology	Sedimentary	Conglomerate
4	Medium (red/tan)	Yes	Fine	Yes-flat	Yes	Dominantly Quartz Clasts of Grains	Sedimentary	Sandstone
5								
Example	light	yes	medium	yes-flat	yes	none	sedimentary	sandstone



Las Vegas Suite (Suite 2)

Draw what your rock looks like in the space provided to the left. Sometimes drawings help to make interpretations.

What type of rock is Rock 4? Sandstone

In what environments do you find Rock 4 in (think beyond water transport/deposition)? aeolian wind deposited sand dunes

What type of rock is Rock 3? Conglomerate

In what environments do you find Rock 3? High energy water transport continental rivers

Is Rock 3 from a higher or lower energy environment then Rock 4? Higher

What type of rock is Rock 2? Silty Limestone

In what environments do you find Rock 2 in? marine - near continent

What unique clues to you see to its depositional environment? fossils

Is Rock 2 from a higher or lower energy environment then Rock 3? lower

What type of rock is rock 1? Limestone

In what environments do you find Rock 1 in? marine - deep water

Is Rock 1 from a higher or lower energy environment then Rock 2? lower

Hypothesize on the next page as to what caused this rock sequence to develop the way it did and give a narrative description of depositional environment to create a mental visualization for others.

Suite 2 Hypothesis

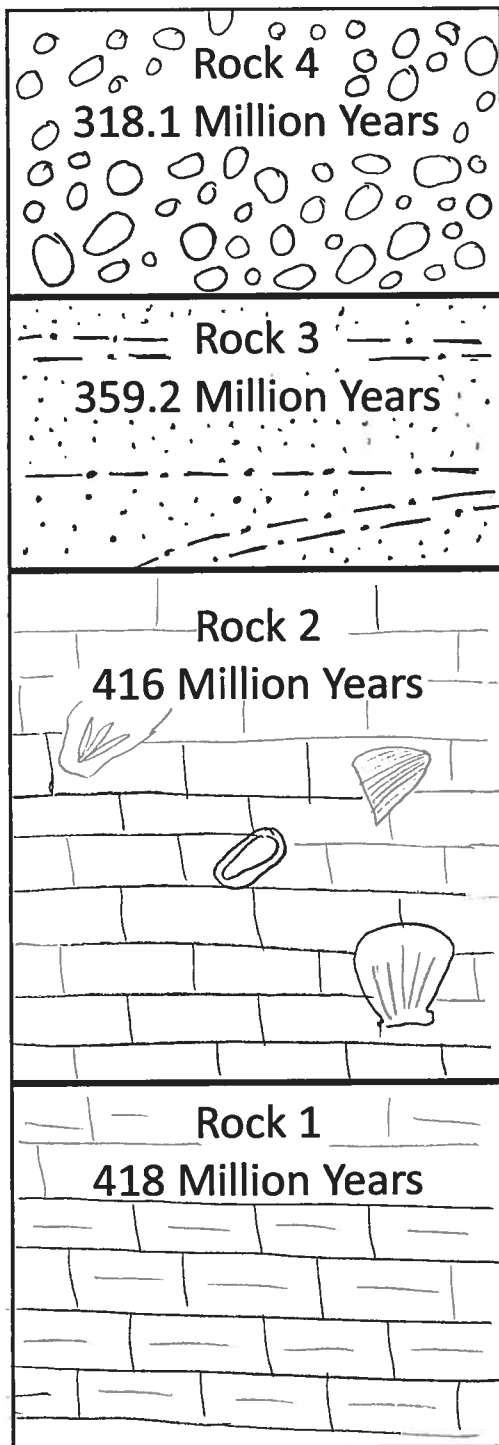
This stratigraphic sequence of sedimentary rocks shows the shallowing of a marine body that becomes an aeolian (land-wind) environment over time.

The oldest rocks in this section were submerged in a deep water/low energy environment (limestone) like the calm waters of the Bahamas. The water began to shallow (higher energy/wave action) and the rocks became siltier (silty limestone). This shallowing continued (possible tectonic uplift?) and the clast sizes increased dramatically (conglomerate), signifying an even higher energy environment such as a river or river mouth. Eventually, the area dried up and grains were now transported by wind (aeolian), not water, leaving large sand dunes, such as those seen in the Sahara.

Suite 3

Rock Identification Work Sheet

ID	Color? (Light, medium, dark)	Visible grains? Yes or no	If YES, is grain size fine, medium, or coarse?	Layers? If yes are they flat or wavy?	Can it scratch glass?	Other identifiers (gas bubbles, reaction to acid)	Is it: Igneous, Sedimentary, or Metamorphic	Name
1	Medium	No	-	Yes - Flat & Platey	Yes (Slightly)	Smooth Texture - Reacts with HCl on fractures	Sedimentary	Shale/Slightly Limey Shale
2	Light	No	-	No	No	Shell Fossils - Reacts with HCl	Sedimentary	Limestone
3	Light	Yes - In some beds	Fine	Yes - Flat	Yes	Interbeds of alternating grain size - does NOT react with HCl	Sedimentary	Interbedded sandy dolomite / sandstone
4	Medium	Yes	Coarse	No	Yes	Mixed Clast Types	Sedimentary	Conglomerate
5								
Example	light	yes	medium	yes-flat	yes	none	sedimentary	sandstone



Eureka, Nevada Suite (Suite 3)

Draw what your rock looks like in the space provided to the left. Sometimes drawings help to make interpretations.

What type of rock is Rock 4? conglomerate

In what environments do you find Rock 4 in? Fluvial (Rivers / River mouth)
high energy water transport

What type of rock is Rock 3? Interbedded siltstone & sandstone

In what environments do you find Rock 3? Continental shelf
near continent - standing water

Is Rock 3 from a higher or lower energy environment than Rock 4? lower

Is there any energy fluctuation? How do you know? yes - change in grain size (beds)

What type of rock is Rock 2? fossiliferous limestone

In what environments do you find Rock 2 in? Continental shelf (edge?)

Is Rock 2 from a higher or lower energy environment than Rock 3? lower

What type of rock is Rock 1? Shale

In what environments do you find Rock 1 in? marine - deep water (no fossils)

Is Rock 1 from a higher or lower energy environment than Rock 2? lower

Hypothesize on the next page as to what caused this rock sequence to develop the way it did and give a narrative description of depositional environment to create a mental visualization for others.

Suite 3 Hypothesis

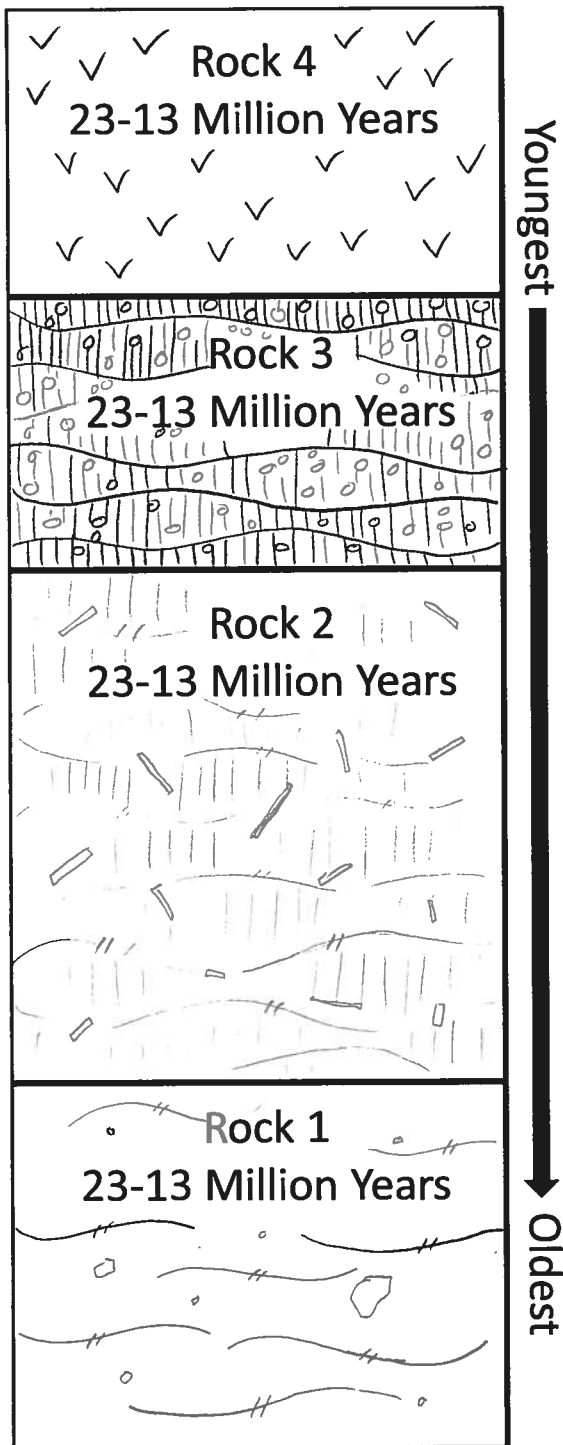
This stratigraphic section of sedimentary rocks shows a marine environment that shallowed over time.

The beginning of this sequence of rocks originates deep in the ocean where shale can be deposited. The deep water shale gave way to the shallower (still low energy) fossiliferous limestone. This type of rock is similar to rocks currently being formed at the Great Barrier Reef. This shallowing continued, with higher energy deposition occurring intermittently with lower energy deposition, resulting in alternating layers of sandstone and sandy dolomite. This could have been due to fluctuations between periods of wave action and no wave action. As the energy of deposition increases (shallowing continues), grain size also increases. The conglomerate sample at the top (youngest) of our sequence tells us that something happened to drastically change our depositional environment. This was likely due to a Mountain building event.

Suite 4

Rock Identification Work Sheet

ID	Color? (Light, medium, dark)	Visible grains? Yes or no	If YES, is grain size fine, medium, or coarse?	Layers? If yes are they flat or wavy?	Can it scratch glass?	Other identifiers (gas bubbles, reaction to acid)	Is it: Igneous, Sedimentary, or Metamorphic	Name
1	Light	Some (Phenocrysts)	Fine	No	Yes (Slightly)	Phenocrysts & Pink Color	Igneous (Extrusive)	Rhyolite
2	Light	Some (Phenocrysts)	Fine to Med	No	Yes (Slightly)	Phenocrysts & Grey Color	Igneous (Extrusive)	Andesite
3	Dark	No	-	No	Yes (Slightly)	Bubbles (Vesicular)	Igneous (Extrusive)	Basalt
4	Light	No	-	No	No	Bubbles (Vesicular) / Foamy Sharp Texture	Igneous (Extrusive)	Pumice
5								
Example	light	yes	medium	yes-flat	yes	none	sedimentary	sandstone



Lovelock Area (Suite 4)

Draw what your rock looks like in the space provided to the left. Sometimes drawings help to make interpretations.

What type of rock is Rock 4? *pumice*

Compositional classification or Rock 4 (Circle one)? Felsic Intermediate Mafic Ultramafic
can't tell!! (volcanic glass, no minerals)

What makes this rock different from Rocks 3, 2, & 1 and why?

What type of rock is Rock 3? *basalt*

Compositional classification or Rock 3 (Circle one)? Felsic Intermediate Mafic Ultramafic

What is the most compelling clue for what Rock 3 is?

What type of rock is Rock 2? *Andesite*

Compositional classification or Rock 2 (Circle one)? Felsic Intermediate Mafic Ultramafic

What type of rock is rock 1? *Rhyolite*

Compositional classification or Rock 2 (Circle one)? Felsic Intermediate Mafic Ultramafic

Hypothesize on the next page as to what caused this rock sequence to develop the way it did and give a narrative description of depositional environment to create a mental visualization for others.

Suite 4 Hypothesis

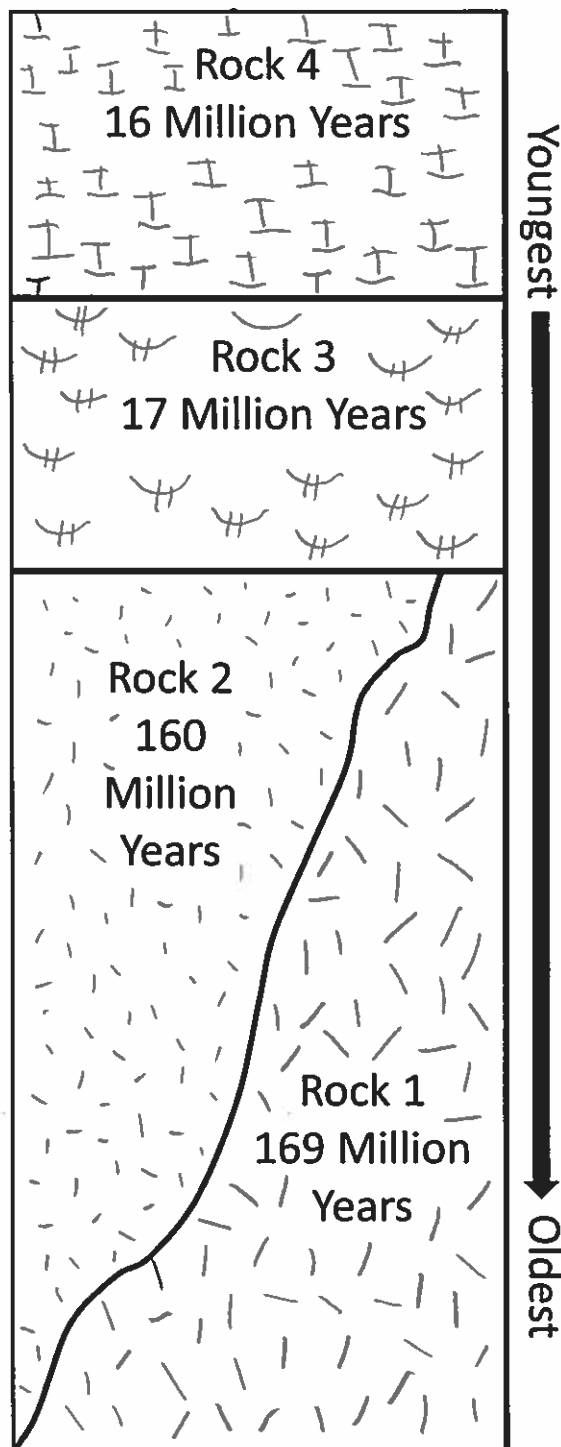
This stratigraphic section of extrusive volcanic rocks shows change in lava composition during the eruption cycle.

We know this suite of rocks is extrusive because of the sample grain size. Early eruption was felsic in composition (Rhyolite) and is seen at bottom of sequence (first deposited). This means the lava had sat in the crust and incorporated lots of material in order to acquire its felsic composition. Lava composition becomes intermediate in (Andesite), then mafic (Basalt) indicating the lava has more of a direct route to the surface than it initially did. Then the lava becomes more gaseous in nature, causing more vesicles (bubbles) to form. Then the eruption finally happens releasing a very gas-rich/foamy lava that created a light, vesicular pumice rock or Sample 4.

Suite 5

Rock Identification Work Sheet

ID	Color? (Light, medium, dark)	Visible grains? Yes or no	If YES, is grain size fine, medium, or coarse?	Layers? If yes are they flat or wavy?	Can it scratch glass?	Other identifiers (gas bubbles, reaction to acid)	Is it: Igneous, Sedimentary, or Metamorphic	Name
1	Light & Dark (Almost looks like salt and pepper)	Yes	Coarse	No	Yes	No	Igneous	Granite/Grano diorite
2	Light	Yes	Medium	No	Yes	No	Igneous	Quartz-rich Granitoids
3	Medium	No	fine-medium	No	Yes	gas bubbles and clasts of granodiorite in volcanics in rock.	Igneous	Andesite
4	Light	no	Fine	No	No	Really soft, feels like chalk	Sedimentary	Diatomite
5								
Example	light	yes	medium	yes-flat	yes	none	sedimentary	sandstone



Yerington Area Suite (Suite 5)

Draw what your rock looks like in the space provided to the left. Sometimes drawings help to make interpretations.

Though similar, this rock is not Chalk. Please read page 110 in the "Roadside Geology of Nevada" book to learn more about this rock.

What type of rock is Rock 4? ~~Chalk~~ Diatomite

What evidence do you see to support the hypothesis that rocks 1 and 2 are older than Rock 3?

Rock 3 is cutting rocks 1 & 2. And clasts of 1 & 2 in 3.

What type of rock is Rock 3? Andesite

Compositional classification or Rock 3 (Circle one)? Felsic Intermediate Mafic Ultramafic

What evidence do you see to support the hypothesis that Rock 1 is older than Rock 2?

Rock 1 is cutting Rock 2

What type of rock is Rock 2? Quartz granitoid

Compositional classification or Rock 2 (Circle one)? Felsic Intermediate Mafic Ultramafic

What type of rock is rock 1? Granodiorite

Compositional classification or Rock 1 (Circle one)? Felsic Intermediate Mafic Ultramafic

Hypothesize on the next page as to what caused this rock sequence to develop the way it did and give a narrative description of depositional environment to create a mental visualization for others.

Hypothesis

This sequence of rocks starts with a basal granodiorite that was intruded by a younger quartz rich granitoid, which is evidenced by the granitoid cutting through the granodiorite. Then a later volcanic event covered the latter with andesite, which is evidenced by the clasts of rocks one and two in rock 3. During this time in Nevada there were large pluvial lakes that were being supplied by lots of silica from proximal volcanic activities. This allowed for large diatom blooms and large deposits of diatomite(Rock 4) to form.

Rocks

Environment	Rocks (Suite 3)
Eureka-	Shale
Carbonate	Limestone
	Sandy Dolostone-Sandstone
	Conglomerate

Environment	Rocks (Suite 1)
Carson City-	Granodiorite
Metamorphic &	Hornfels
Intrusive	Schist
	Metaconglomerate

Environment	Rocks (Suite 4)
Lovelock-	Rhyolite
Volcanic	Andesite-Dacite
	Basalt
	Pumice

Environment	Rocks (Suite 2)
Las Vegas-	Limestone
Carbonate-Aeolian	Silty Limestone
	Conglomerate
	Sandstone

Environment	Rocks (Suite 5)
Yerington-	Diatomite
Intrusive &	Andesite
Volcanic	Quartz Rich Granitiod
	Granodiorite