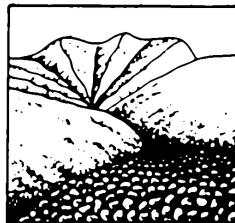


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DEBRIS FLOWS: Disasters, Risk, Forecast, Protection

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Логотип конференции основан на рисунке из книги К.Ф. Нейшмана «Катастрофы селевых потоков» (Москва: Географгиз, 1951, с. 51).

Conference logo is based on a figure from S.M. Fleishman's book on Debris Flows (Moscow: Geografiz, 1951, p. 51).

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ghklb ijħghklb , mdehgu, eblhehjh -ijħjjZnbqkđbc khklZ ihjh b kljmdlmj, aZbfħcklb wdahjgguo ijħpkkh kwghjggufb) kihkh[klħx] kehjjZahZgbx , qZklhghkysfm dZIZkljħnbqkđbc oZjZdlj .

AZijħb 1956-1972 j, ZIZd 1991-1996 j. [Zkkcg ijħreh hdheh 9 fhs - guo kee , dhlhju gZgkeb kvaguc msjj j. DZiZgm =hjbkm, KkbbZgmFjjb b bō ZjehfjZpbyf. Bglgkbgħklv ħkZdh ijb wlfh khħlklħZeZ 70-80 ff. < 1956 j. iZħdZfb [ueb ijħgu , eb[h ihēghklv] jZajmrgu, [he 200 beuo aZgbc, kkggu , ijZdlbqkđb, k fħklū qja jdb <hoqb b =ob . < ihkegb jħū [Zkkc - g jdb <hoqb ijħohbeb [he qZklū, gh fg fhsgu ken iZħdb, dhlhju gZghkbeb wdheh]bqkđbc b wdghghbqkđbc msjj j. DZiZgm

KhjeZkgh bkkehZgbyf PhygZ E. < (1966-1976 j), <Zjmfygz =. (1972 j), ħkghūZxsbfky gZ bamZevghf h[kehZgbb b fbnjbjhZgbb Zwjħnhħkgbfdħ ljjbħjbb jZkkfZljZfħ]h [ZkkcgZ, ihkegb ħlgg d gZb[he keZdlbguf (k ihljyfhklv g j ħgh]h jZaZ 3 jħZ). KeZy kihkh[ghklv] [ZkkcgZ j <hoqb, ijZeō dhlhjh]h h[gZgu ūohū kdZevguo ihjh, ihjguo bg- lqkbgħc wjħabb b Zddmfmeypbb djmighh[ehfgh]h fZljZeZ (hiheaguf ye) - gbyfb, ihfulufb [jjZfb b h[ZeZfb, fZkkħufb ħkuiyfb b j .) ħpgbZlky 15- 35 luk. f³ ūghkh k l df² Zdlbgħc iħsZb kehjjZahZgby aZ l kev.

JZkkfZljZfu hdeZ dhfiedkgZy ijħefZ h[kiqgby wdheh]bqkđhc [ahizkghklb ljjbħjbb jZafsgby aZdhgkqjħjZggh]h ohklhojZgbebsZ msev j <hoqb h l ħafgh]h kehjh iZħdZ , ijmkfZljZ khaZgb ij ihkegbf ħħojZgbebsZ . JdhfghZggh ħagb jħjħlōgbqkđh]h khħjmgb , ihfbħ ħkghgh]h gZagZqgby - ZddmfmebjhZgby ba[ulhghc ħū , ijgZagZqZlky ey ijħ - fureggh]h ħħkgZlgy b ūjZ[ħdb wedljħwgjjbb .

< [Zkkcg jdb <hoqb b ijblħdh (>ZjZaZfb b Imojml) knħjfbjhZgu ljb ohklhojZgbebsZ kkmffZjguf h[ffhf mehgguo ohklh hdheh 40 feg. f³.

Kh jħ wdkiemZIZpbbwlbo khħjmgb ħkljh ħagbdZeZ ijħefZ h[kiq - gby [ahizkghklb ljjbħjbc jZafsgby wlbo ħllkgguo h[tdlh ħ kee b iZ - ħdh fgvr h[kiqgghklb . § 1982 j « jfGBBljħpħl » ijklZbe lōgdh -wdhghghbqkđb ijħgby ih jZajZ[ħld bggjghc aZsblū ljjbħjbc , ohklhojZgbebs b ħlZeh imklhc ihjhū AZg[amjkdħ]h FED , j [ueZ ijmkfħlj - gZ jdhgkljmdpby ketjħimkdguo b kehlysbō khħjmgb , k mqlhf ijħimkdZ iZħdh 0,01 % h[kiqgghklb. lħdlhf ijmkfZljZehkv ħagb ħihegb - lēvguo kemjZxsbo khħjmgb , jZiħeZ]Zxsboky ūr ohklhojZgbebs b ħlZeh imklū ihjh .

GZjkb.1 ijħgu jħjħjZnu ebguo iZħdh 1 b.0,01 % h[kiqgghklb ey klħjh « j <hoqb - klħ j Imojml » b « j <hoqb - jZkqguc klħj », Zggū dh - lħjuo ħkembēb jZkqguf h[ħkghZgbf fjħijbylbc bggjghc ijħbhkeħc aZsblū (AZg[amjkdħ]h..., 1995).

< gZklhys jħy ħħ ħ j <hoqb ħ h[oh ohklhojZgbebsZ ijħbahlky jħy ħħħlħysbfb lmggeyfb k[lhgghc b eħ[lhgghc h[edhc h[sē ijħ - lygghklv ħdheh 6,0 df.

KmffZjgZy ijħimkdgZy kihkh[ghklv ihkegbō khklZey 202 f³/k qlħ khħl klħZeh iZħdhħfm jZkohm 0,1 % h[kiqgghklb . < ħ jħy bkkehZgby ih bZjghklbd gZijyggħ -ñħjfbjhZggh]h khklhygby dhgkljmdpbc lmggeē jZaf - sgguo msev j j <hoqb, Imojml b >ZjZaZfb. (GjZajmrZxsbc ..., 1994), iħdZaZeb ħiZkgh kgbgb ijħqghklb [lħgZ gZ ħlēvguo mqZklZoh lZkk ħħħlħysbo lmggeē , ljmxsbo mkbegby.

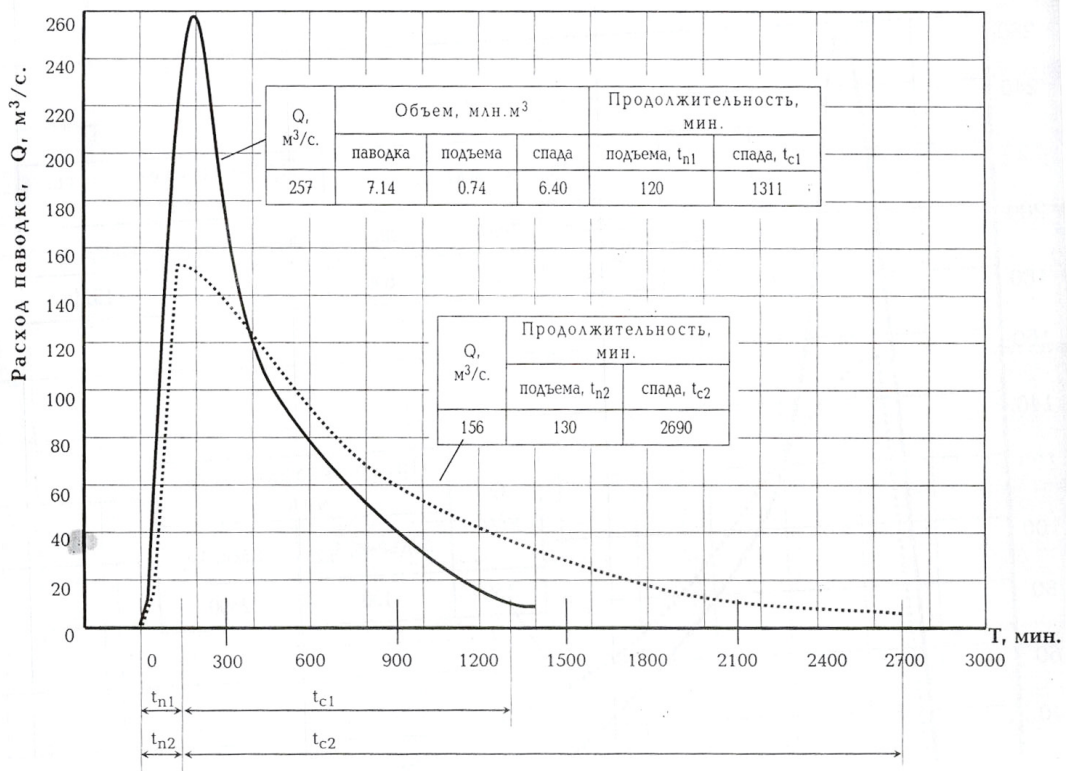
JZebahZgguc ijħd mkbegby h[edh (1995 j) kō 3-ō lmggeē ijħē d kgbgbx bō kmffZjghc ijħimkdghc kihkh[ghklb gZ 15-20 % b gZklhys jħy , khħlklħ ēbqg 185,0 f³/k fħħ 257,0 f³/k (0,01 % h[kiqgghklb).

WefjZjguc ZgZebaiħdZauZ , qlħ ey ħafgh]h jZajmrgby aZdhgkqjħ - jħZggh]h ohklhojZgbebsZ gZ j <hoqb ħ iZħdh fgvr h[kiqgghklb (Zg - ghf kemqZ 0,01 %) gh[ohfb mēbqgb kmffZjghc ijħimkdghc kihkh[ghklb ħħ - ħlħysbo khħjmgb ijZeō 30 %.

2 Обоснование комплексности и эффективности мероприятий инженерной защиты территорий размещения хвостохранилища на р. Вохчи от воздействия паводков, эффективного водоснабжения и выработки электроэнергии

GZ hkgZgbb khiklZblevgh]h ZgZebaZjZaebqguo ZjbZglh hhihimkdghc kihkh]ghklb hhhlysbolmggec 1, 2 b3 ohklhojZgbebsZ msev j <hoqb b ihm]gh]h jrgby jyZ ijh[ef wdheh]hwdhghfbqkdhc klZ]bevghklb h[tdlZ , [ueh ijbgy]h jrgb h haggbb ij aZdhgkj]hZgguf khhjmgbf hhojZgbeb - sZ, dhljh h[kiqb hafhghklv :

- aZsblblv ohklhojZgbebs h keuo izhdh ;
- h[kiqblv dhf]bgZl, ijb]h jZ[h gZ ihegmX fhsghklv , ijhfuregghc h - hc (aZfg ihljeyfhc baj eob) ;
- ZddmfmebjhZlv izhdh , mfgvry jZkqlguc jZkoh hkh]hkguo khhjmg - gbc ;
- khaZlv iheaguc h[tf ey ujZ[hldb hiheglevghc wedljhwg]bb .



Иск.1. Бжл]Znu ebguo izhdh 1%-c b 0.01 %-c hkiqgghklb ey kljh <j] <hoqb - klh j] mojml> b <j] <hoqb - jZkqlguc klh > .

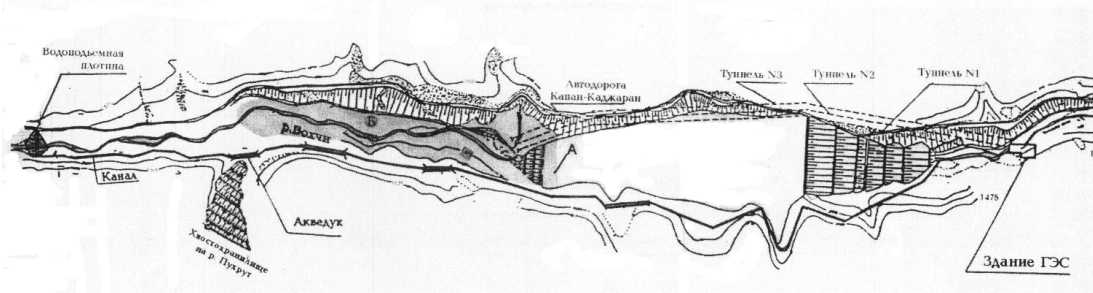
< khklZ]bjhlogbqkdbo khhjmgbc dhfiedkZ hhojZgbebsZ - F=WK oh - y] kemxsb weglu(jbk.2):

- ieh]bgZ k km]ebgkluf wdjZghf khaZlky imlf gZjZsbZgby Zf]u ohklh - o]ZgbebsZ gZ ukhm 8,0 f; iheaguc h[tf hhojZgbebsZ - 4,0 feg . f³; lhesbgZ ijhlbhbv]Zpbhggh]h wdjZgZ- 8,0 f.

- jgZ (lmggev 1);
- hhjfbgd(lmggev 2);
- hkh]hk (lmggev 3), jZkqblZgguc gZjZ[hlm gZihghf jbf ;
- aZgb F=WK k gZkhkghc klZgpbc b ljfy Z]j]Z]Zfb k lmj]bgZfb jZbZevgh - kh]h]biZ, fhsghklv 600 d< dZy (iZj]ju G = 110 f; Q_p = 0,75 f³/k; n = 1500 h[/fbg .) kZkbgojhguf]gZ]hjh (N = 700 d<, n = 1500 h[/fbg .).

Gkhfggh ijklZbl bg]k jZkql wdhghfbqkdhc wnd]bghklb khjmg - gby F=WK k ghhc gZkhkghc klZgpbc , hkmsklgguc khhl]lbb k flhdhc

һpgdb wnnldbghklb fZeuo ≡WK ҺpgZo 1984] , Һikq Һ gZ heeZju KR Һ (Ih- kh[b... , 1995), Һkghm dhljhс ihehg ZevlgZlbguc ZjbZgl khhjmgby б - aevghс wedljhklZgpbb (>WK). <hguc jbf, Һklhj jdhfgmfhc F≡WK, oZjZd ljbamky klhdhf jdb Һ jh 80 % h[kiqgghklb б hhhljegbf dhf[bgZIZ , ijbgylyf gZ h[hajbfmx ijkidlbm Һ jZaf 50 % fhsghklb h fZdkbfZevghс ih- ljghklb.



Јьк 2. AZsblZ aZdhgkjһhZgggh ohklohZgbebsZ Һmsev jdb <hoqb h[keс б iZhdh 0.01 %-с h[kiqgghklb imlf khaZgby hhojZgbebsZ , Һ dZqkl iehlgu kemb kms klm s ohklohZgbebs . Һ - wdjZggZfughc Zlfu (iehlbgZ) ; Һ - hhojZgbebs .

Кемі һлһблv lZd ihehblevguc fhfg h khhjmgby hhojZgbebsZ , aZdexqZxsбсky Һ wnnldbghс aZfg gug eklmxсс gZkhkghс klZgpbb gZ jdb ≡ob k ukhlhc ihdZqdb 380 f gZ ghmx gZkhkgmx klZgpbx gZ jdb <hoqb (gb aZ - gby gZfqZfhс F≡WK) k ukhlhc ihdZqdb 180 f, qlh ihahebl mfgvrbly jZkoh wedljhwg]bb dZdaZkq mfgvrgby ukhlу ihdZqdb, lZd b kgbgy mevgh]h jZkoh wedljhwg]bb , ihljeyfhс gZkhZfb [he wgljhdhc dhgkljmdpbb (k7,3 h 2,7 feg . d<1) (KliZgyg b] , 2007).

3 Заключение

Zbafby ijEZ]Zfu kihkh Һ aZsblу ljbhjhс б aZdhgkjһhZgggh ohklohZgbebs Һ [Zkkcg j <hoqb k kmffZjguf h[tfh mehgguo ohklh , jZ - guf hdheh 40 feg . f³, ihahebl bkdexqblv dZIZkljһnbqkdb ihkeklby , kyaZggу k jZafu hf б jZajmrgbf ihkegbo h hafhguo fhsguo кеub ihlhd Һ b iZh - dhub jZkoh 0,01 % h[kiqgghklb.

Ijb jZ[hl FFD gZ ihegmх fhsgklv h[tf hhojZgbebsZ bkihevamky ey ijhf Һ hkgZ[gy dhf[bgZIZ , ZF≡WK jZ[hlZ lhevdh h fgh]hhgu fkyru (Zi - jev -Z]mkl) kljfy Zlj]ZIZfb gZ ihegmх fhsgklv .

Ijb jZ[hl FFD gZ 50 % fhsgklv , hhojZgbebs iheghklvх bkihevamky ey uZ[hlb wedljhwg]bb . Ijb wlf Һ fgh]hhgu fkyru jZ[hlZ 3 Zlj]ZIZ gZ ihegmх fhsgklv , fZehhgu (kglyjv -fZj) ijtheZ]Zlky jZ[hlZ hgh]h Zlj] - ZIZ gZ 30 % fhsgklb [a heq gby Һ jZ[hlm gZkhkgc klZgpbb.

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